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VALUE-PACKED 76-PAGE NEW LOOK ISSUE AND FIVE BRAND NEW SECTIONS START THIS WEEK

NEW COMPUTER EXPRESS

FIRST NEWS • FIRST REVIEWS • BEST BUYS • YOUR WEEKLY GUIDE

THIS WEEK

ATARI

You've seen the Lynx – now see the Lynx 2!
Plus...The ST hardware sensation of the year

AMSTRAD

launches its Generation 3 PCs. They're fast, they're tough, they're stylish – but are they a bargain?

AMIGA

The most sophisticated fractal mapping software on any home computer has just arrived. And for only £50 you get Mars thrown in too...

EXCLUSIVE!

SECRET AMIGA UNVEILED!

Turn to page 7 for details of the machine Commodore wanted to keep under wraps

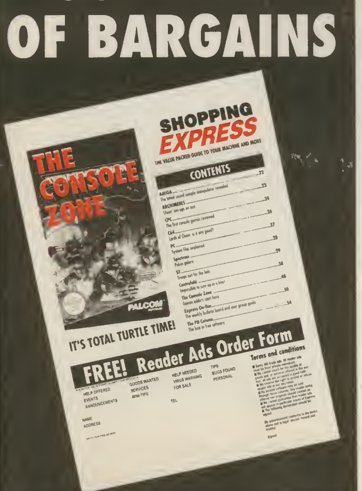
BEYOND BELIEF

How tomorrow's games will blow your mind

Psst!

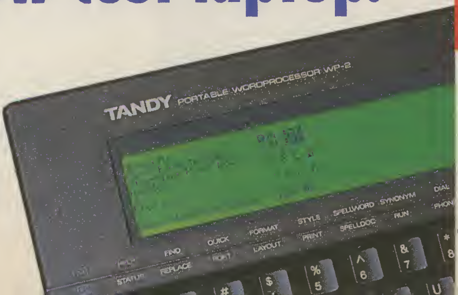
Wanna sound like a star? Then sample the samplers on page 66

PLUS 36 PAGES OF BARGAINS



SHOPPING EXPRESS
THE CONSOLE ZONE
CONTENTS
IT'S TOTAL TURTLE TIME!
FREE! Reader Ads Order Form

The latest low-cost laptop:



TANDY PORTABLE WORDPROCESSOR WP-2

Is it the best?

frontend

edited by Colin Campbell

Give your machine Ramsay Street credibility

What possible link could these three delightful soap starettes have with your home computer? How can it be that the inhabitants of Ramsay Street are gracing the very same pages that bring you such desirables as DOS-based virus strains and analytic converters?

The truth is that this trio, Sharon, Bronwyn and Jane, will all feature in a computer game dedicated to life with TV's *Neighbours.* Zeppelin Games is to launch *Neighbours* next month as a full price title on most major formats. It will be appearing on the brand new Impulze label.

In the game you get to control characters as they go about their usual Erinsborough-esque antics. But licensor Aunty Beeb has insisted that no harm shall come to any of the characters in the game. And a ban has been imposed on Zeppelin including hanky panky in its storylines. ▪

• It is reckoned by various futurists that desktop computers will soon be a thing of the past. News from JAPAN would seem to bolster that argument. According to a survey by the Japanese Electronic Industry Development Association, portables made up 51 per cent of computers bought in the second three months of this year. Sales of portables are up 86 per cent while desktops have dipped 18 per cent.

• Employees of **EPSON** in the US are fond of sending each other little E-mail messages. But they became furious recently when it emerged that top brass at the company had been reading the ditties. So furious in fact that a number are reported to be suing under California's anti-wiretap laws. ▪

See what money DOS for you

[illegible] richest man in the computer industry [illegible]

Microsoft, [illegible] $3.2 billion. That makes the man who came up with MS-DOS 33rd in the world league of billionaires. He's spending a trifling $10 million of his loot on an underground mansion with a 20-car garage and cinema. ▪

Three and a half Amigas a minute

Commodore
SCREEN GEMS
AMIGA 500

The undoubted success of the Amiga has manufacturer Commodore going into full world domination mode. The firm says there are 346,000 Amiga owners in the UK at the moment and expects there to be a further 154,000 by the end of this year. That would bring the British installed base up to a hefty half a million.

It also means that from now until the New Year, 204 Amigas will be bought every working hour in the UK. Or to put it another way, 3.5 Amigas will be bought in every shop minute. Which means the British public will be laying out more than £70 million on Amigas... ▪

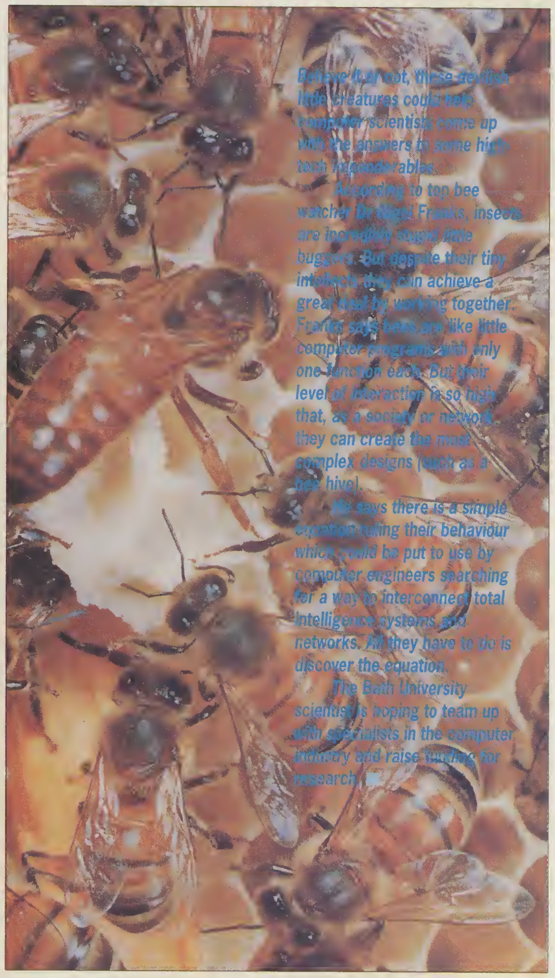
Crunching numbers

Birmingham resident Jack Winfield, 89, has joined the ever-increasing club of people stitched up by the interminable logic of computers.

Mr Winfield has lived in his Bridgeburn Road council house for the past 32 years and had decided to buy the place. However, things all went wrong when the council's computer banged off a letter to him refusing permission to buy. The reason? The machine had cleverly detected a rent arrears – of four whole pence. Birmingham's Housing Department is looking into the matter. ▪

A rough and tough version of Sir Clive Sinclair's Z88 laptop has been produced to help fisherman in the Pacific. The Hardcase consists of Z88 in rugged box hooked up to a set of scales.

The computing power can apparently help fishermen judge the weight of their catches accurately while out at sea – hitherto impossible because of the pitch and roll of the ship. The Hardcase can also operate non-stop for 24 hours and is so resilient it could even be buried underground for such applications as measuring earth moisture. ▪



Believe it or not, these devilish little creatures could help computer scientists come up with the answers to some high-tech imponderables.

According to top bee watcher Dr Nigel Franks, insects are incredibly stupid little buggers. But despite their tiny intellects they can achieve a great deal by working together. Franks says bees are like little computer programs with only one function each. But their level of interaction is so high that, as a society or network, they can create the most complex designs (such as a bee hive).

He says there is a simple equation ruling their behaviour which could be put to use by computer engineers searching for a way to interconnect total intelligence systems and networks. All they have to do is discover the equation.

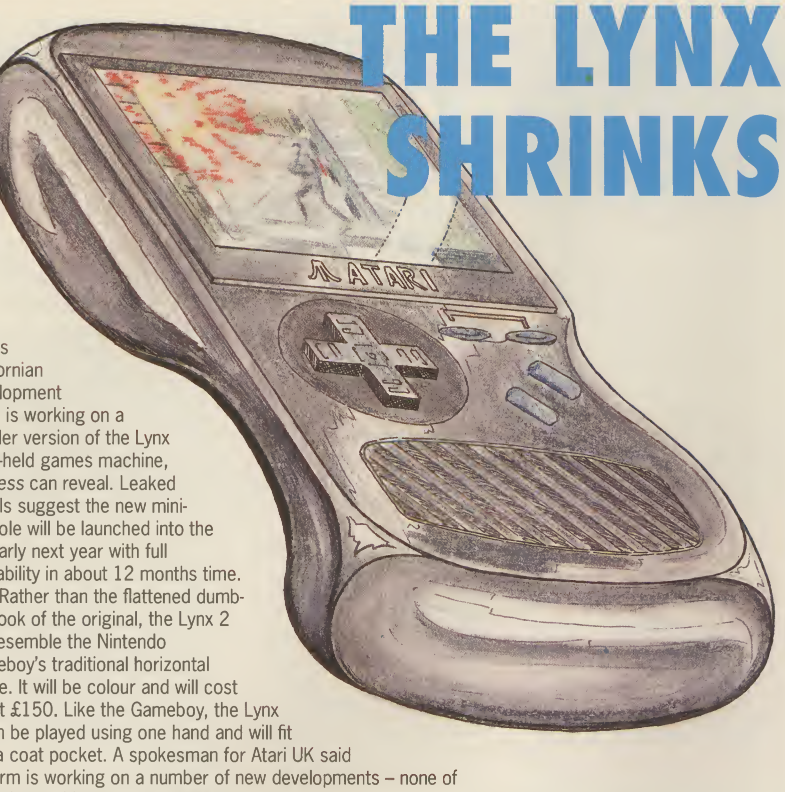
The Bath University scientist is hoping to team up with specialists in the computer industry and raise funding for research. ▪

Star Trek phones on the way

Remember those neat little hand-held communications devices in *Star Trek*? You know – the ones which flip open and go Beep Brrrip before Captain Kirk says "Jeez, beam me up before I get totalled by this week's monster". Well, developments in the US could make such gadgets a reality in the near future.

BellSouth, Millicom and *The Washington Post* are financing a new Personal Communications Network system. The phones actually look like the *Star Trek* devices, use less power than normal cellular phones and could cost as little as £70. Some 2,000 people will be using the phones in the Washington area next year in an experimental exercise and it is hoped that these will be the norm in the US and Europe within a few years. ▪

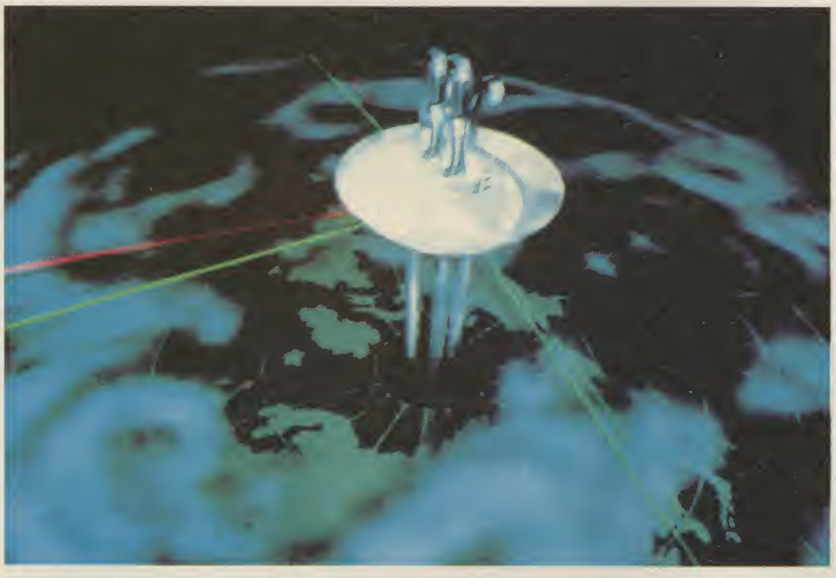
THE LYNX SHRINKS



Atari's Californian development team is working on a smaller version of the Lynx hand-held games machine, *Express* can reveal. Leaked details suggest the new mini-console will be launched into the UK early next year with full availability in about 12 months time.

Rather than the flattened dumb-bell look of the original, the Lynx 2 will resemble the Nintendo Gameboy's traditional horizontal shape. It will be colour and will cost about £150. Like the Gameboy, the Lynx 2 can be played using one hand and will fit into a coat pocket. A spokesman for Atari UK said the firm is working on a number of new developments – none of which he could comment on.

- The **SOUND** of computers whirring and printers clicking in offices is enough to send anybody bonkers. But computers could soon come with their own sound effects. The Rank Xerox Research Institute is working on computers which make pleasant sounds such as birds singing, trees rustling or streams flowing. So, within a few years, your office could sound like the Hanging Gardens of Babylon. Just enough to send everyone bonkers.
- **In the US an organisation has been set up to convert 10,000 of the “world's most important BOOKS” into ASCII text format. Project Gutenburg is hoping to attract volunteers for this Herculean task. All the text will then be stored on CD-ROM disks.**
- Encore's computer **QUIZ** game *A Question Of Sport* is to be re-released at a new budget price of £9.99 for the ST, Amiga and PC. Based on the TV show of the same name, *QoS* features all the favourite sections such as 'What Happened Next' and 'Picture Board'.
- **The Chic Computer Club, one of the UK's largest multi-machine user groups, will be celebrating its eighth BIRTHDAY by organising the first Thames Valley Computer Show. It will be held at the R-G Hall in High Wycombe on Saturday October 6. Plenty of bargains are promised. Call 0753 884473.**
- With Apple and IBM launching home versions of their machines a war of words is on the way. PC owners will turn crimson with **FURY** when they hear what Apple's managing director Phillipe Chaveau has to say: “IBM users graduate on to Macs, but it's a one way street and they never go back. IBM's new systems are only going where we have already been.”



• Visitors to Image Processing '90 at the Wembley Exhibition Hall next month will be treated to some stunning computer aided visuals such as the above.

This shot, created for the BBC, is part of a sequence put together by Infynity Computer Animation using Computer General's Pixel Machine.

Also on show will be other high performance animations running on graphics workstations from Sun, IBM and DEC.

The exhibition runs from October 9 to the 11. For more information call the Wembley Exhibition Hall on 081-902 8833.

CONTENTS

FEATURES

What will we be playing in 10 years time?
The future of games laid bare – page 17

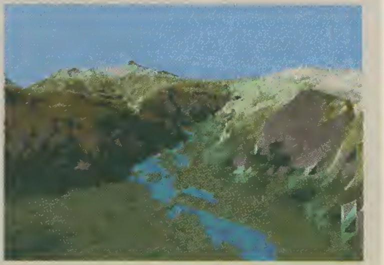
Take a trip through the circuits of your machine
How will cyberspace change the real world? – page 58

REVIEWS

Has the Z88 met its match?
Tandy's new machine has a key advantage – page 14

How do the samplers rate?
The Express guide to ST and Amiga sound action – page 16

In a world of its own
Fancy designing your own mountain range? – page 72

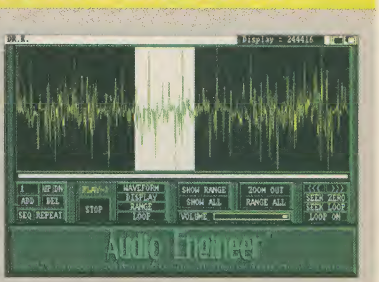


EVERY WEEK

News 4-9
Opinion 10
Letters 12
Circuit City 61
Tech Tips 62
Subscriptions 68
Games Week 70
Competition 74

SHOPPING EXPRESS

Amiga 22
Including news of the latest sound sampler



Archimedes 23
CPC 24
C64 25
PC 26
Spectrum 27
ST 28
Centrefold 38
Express Jobs 40
Classified 42
Console Zone 48
On-line 50
The PD Column

Playing games, pure and simple

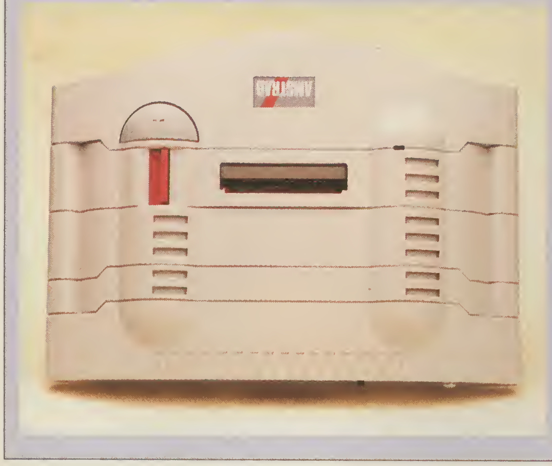
In classic Amstrad fashion the CPC console looks the part – aesthetically space-age and not dissimilar to a George Lucas galactic battleship. Essentially it's the five year old CPC with the keyboard, disk drive *et al* removed. As a computer it barely merits a mention but as a dedicated games machine it'll be a blinding success.

Why? Simple. At less than £100 it's within everybody's price range. On a frosty morning late this December thousands of very young boys and girls will be thrilled to bits with their first computer – and it'll be a CPC console.

There will also be cartloads of cartridges to choose from. CPC games are two a penny these days and it doesn't represent a huge financial burden for software houses to turn cassette games into cartridges.

Amstrad has added a few graphics and sound enhancements to the CPC bodywork to give the console a bit more poke.

Also, everybody will know that the thing exists. Amstrad has pots of money to spend on advertising and readers of anything from *Just Seventeen* to *The Daily Mirror* will be tempted.



Amstrad GX4000
Price: £99
Available: Now
Software outlook: Slow at first but a sound base will develop before next year
Tech spec: Z80A processor running at 4MHz; 64K RAM; 32 colours on-screen from 4,096; cartridge based 128K ROM.

Amiga goes CD

The Commodore Dynamic Total Vision (Amiga CDTV) is, arguably, the most exciting machine to come from the big three (CBM, Atari and Amstrad) since the launches of the mid-1980s, and possibly ever. Ironic then that it's not even a computer – more a domestic multimedia console.

It looks like a cross between a video recorder and a CD player but it can easily be plugged into Amiga 500 technology along with disk drives and keyboard. At the heart of the device is the CD, which holds the promise of sophisticated games too good to be compared with current offerings.

Even better is the promise of "an electronic interactive, instantaneously accessible library" which will be able to exploit the plentiful storage space which CD offers.

A few small doubts do linger about this machine. It is in direct opposition to Philip's impressive CD-I system and although it will be a couple of hundred quid cheaper this may not be enough. Commodore had hoped to be showing it at this week's CES show but alas, it is still not ready and only a select few will be able to get a look.

Commodore CDTV
Price: About £700
Availability: Perhaps before Christmas but realistically, not widely available until next year
Software: Most publishers have pledged support. Should be a wide choice in six months.
Tech specs: Standard Amiga with 68000 chip, 1Mb RAM and extra dedicated chip set. CD-ROM drive capable of storing 550Mb on one disk. Eight times oversampling audio CD player with 16-bit D/A converters. Many peripherals

Mac to the future

Mac enthusiasts, and there are millions of us, will claim that everyone aspires to Macdom and anyone who doesn't is a freak or has been got at by IBM.

This theory will be put to the test next year when the long awaited low-cost Mac will finally arrive in Europe. In fact the wait has been almost painful over here as Apple has stuck to an infuriating policy of keeping prices too high for home owners, and therefore restricting the Mac to humming offices.

When it comes to cheap programs the Mac is really hard to beat. In the US there are thousands of software titles at reasonable prices and a real proliferation of great gadgets as well as titles in the public domain.

The Mac is easy to use and immensely popular with people who aren't interested in getting bogged down by technology.

The entry level Mac is being called the Classic and comes with a mono screen, so lack of colour might be a problem, though most Mac owners don't think so.

Apple Macintosh Classic
Price: About £800
Availability: Early next year
Software outlook: Plenty of public domain, but commercial software is expensive.
Tech spec: 68000 with 1Mb of memory, hard disk option, mono monitor built in.

A real Plus

Isn't this just the old CPC slapped into a new box which looks not unlike the Amiga? "Most definitely not," splutters Amstrad's technical boss Roland Perry. "Our aim is to produce an 8-bit computer with many of the characteristics of a 16-bit model, and I think we've succeeded."

The 464 Plus and 6128 Plus do have enhanced graphic capabilities and the cartridge based software will be able to take advantage of those. Buyers will also be offered a huge array of serious and games software amassed since the original CPC was launched in the mid-Eighties.

Is it worth it? CPCers are falling over themselves attempting to justify the new launches. The fact is they aren't bad value, but not mind blowingly brilliant. The colour version of the 6128 costs more than an Amiga (but you get a monitor as well). We'll leave it for you to decide.

Amstrad 464 Plus / 6128 Plus
Price: £229 (mono 464) to £429 (colour 6128)
Availability: Now
Software: Masses of cheap serious and games software.

The 64 goes on and on (and on)

Commodore
NEW

Commodore doesn't care what critics say about the C64 Games System console. People can poke fun at its drab appearance and they can chortle at the tired technical specification. Let's face it, when Commodore launched the 64 'our boys' were yomping across Goose Green and petrol cost 90 pence a gallon.

All Commodore has to do is point to worldwide sales of something approaching 12 million for the original 64. In the UK alone 1.2 million 64s have been bought.

It is the world's biggest selling home computer and although it isn't quite the shining star of yesteryear you can reckon on the Games System adding on an extra spangle.

Like the Amstrad console it costs only £99. The C64 is regarded warmly by the public and there is a veritable mountain range of software. Because the original 64 had a cartridge port the software is already available.

Commodore won't spend so much promoting it as Amstrad will on the GX4000and the feeling is that the CPC console will be a bit more popular. But that doesn't stop the GS being a great machine for visuals and software support – and at a nice price.

Commodore Games System (GS)
Price: £99
Available: This month
Software Outlook: Very good although top games may be a bit thin on the ground at first
Tech Spec: 6502 processor with 64K. 16 colours on screen with eight hardware sprites.

New kit on the block

An extraordinary selection of hardware will be set before us over the coming months. Indeed, we can anticipate all manner of delights for the next year.

Naturally, *Express* has been chasing every morsel of news on any piece of kit which has a hint of ingenuity. On offer will be miniaturised versions of popular machines, some modernised and reconstructed favourites and the first wonders of the CD age.

But just what is coming out, when, and how much will it all cost?

Here is the definitive guide to the goodies which we reckon you'll be shelling out for over the coming few months.

Big Blue goes home

International Business Machines. What an outfit. Just the thought of Big Blue conjures up images of all things sensible and prudent with just a hint of pomposity. Now the firm is striding into the home computing areana, and at a much more affordable price.

The PS/1, launched officially last week, is a sub-£1,000 286 PC designed for the serious home user. At this price it could not be described, by any stretch of hyperbole, as a bargain. But it is a bona fide IBM PC and not some Taiwanese copy sold by a two-man outfit in a back bedroom.

Those lovable chaps at Amstrad – always with an eye to offering good kit at drastically sub-IBM prices – sell roughly the same machine for roughly the same price, which tells you something about the machine's competitiveness.

Interesting isn't a word usually associated with IBM but the PS/1 does come with a built in 2,400 baud modem and American buyers will be offered free subscriptions to on-line services – this verges on the imaginative and is most certainly a guide to the future.

But without a joystick port or colour graphics as standard it is clear to all that this is no games machine. In fact it's a most sensible object with hardly any jolly bits but lots in the way of good old fashioned common sense.

It may not be not a super-powerful business workstation, and PC aficionados will sneer at it with its lack of expansion and dull tech-spec, but if potential home and small business users can afford to pay for IBM, they probably will.

IBM PS/1
Price: Sub-£1,000
Availability: In the High Street by November
Software outlook: More than you can imagine
Tech spec: 512K RAM 286 PC running at 10MHz. 12-inch mono monitor. Built in modem. Bundled with Microsoft *Works* integrated business software.

New World of gaming

People who have seen the Neo Geo (New World) are almost as bad as people who own one. They start going on about the thing as if it were their first newborn baby. But, if you can put up with their enthusiasm for long enough, you might get the chance to see one yourself.

It represents the new age of home gaming. The visuals really are arcade like – amphetamine fast and louder than a Tokyo amusement arcade.

Coin-op specialist SNK has put the thing together at no small cost and that outlay is being transferred to you. Grey importers are charging around £400 with games weighing in at a pretty awful £200.

When SNK launches officially it should cost around £260 for the hardware and something like £100 for the software. An excellent piece of kit but confined to rich gadgeteers.

SNK Neo Geo
Price: £260 – £400
Availability: Now from grey importers. Official launch soon
Software outlook: Brilliant games, but hugely expensive
Tech specs: Motorola 68000 processor running at 12MHz. 64K RAM, 68K video RAM, 68K ROM, 4,096 colours on screen from palette of 65,535.

What else is there?

If you've a couple of grand to spare take a look at Fujitsu's FM Towns CD-PC. It's a mix and match of a high-end PC and a CD-ROM machine. That way you get all the PC software available and you can start tapping into CD applications – all in glorious VGA. Or for real gadgeteers there's Sony's portable CD-I system, but that could cost more than a grand when it arrives in 1992

A more sensible buy might be the ST-CD which may or may not exist depending on who you speak to at Atari. If it does exist we won't see it for a year.

Then there are the new upgrades to well-known consoles. The Nintendo Super Famicom will make less impact here than Sega's Megadrive but the dark horse is the PC Engine Turbo Grafx which is the best machine. Of those three only the Sega is being officially launched although importers are only too pleased to help buyers of any piece of kit.

Active Distribution's Powarcade – an arcade machine in the home – is a worthwhile and attractive oddity at £300 (see page 74) and we should be seeing more of these machines over the next few months. There's also the Cybertech arcade machine which has been doing good business.

Finally for the more sober-minded Amstard will be releasing a new PC range, the 3000 series, in metal boxes. The only innovative thing about these is the 386SX model's 20MHz processor – one of the first of a new breed of speedy and cheap 386s.

Multimedia for the masses

When three of the world's biggest consumer electronics companies get together you can be sure of something spectacular. So it is with Philips' CD-I system. Developed in conjunction with Sony and Matsushita this Compact Disc based multimedia machine has a lot of weight behind it.

For full details check out our games futures feature on page 17, but the theory is that if you offer the public a TV set with which they can really interact then you're on to a winner.

Low cost CDs will be on offer at about the same time CD-I is launched and they'll range from full video games to truly interactive educational sequences.

The system is just about as simple to set up and use as any games console – just plug in and go.

It had been feared that this machine would be pitched at professional markets leaving us out in the cold for at least five years, but most of the world's great publishing empires are treating CD-I very much as consumer product with a real future.

Philips CD-I
Price: Around £1,000
Availability: Not until the end of next year
Software outlook: Publishers in and outside the computer industry have committed themselves.
Tech spec: Text, sound and pictures combined on a 650Mb CD. Plenty of ports for normal computing. Up to one hour of moving video can be stored on one CD. Custom CD-I chip based on the 68000 with a 32-bit processor and 24-bit audio handling.

NIBBLES

- AT&T is working on a **laptop PC** which will be able to communicate with other machines via radio waves. The American company is in discussion with a number of Japanese manufacturers.
- Software starved **QL** owners can look toward Bangor based Dilwyn Jones Computing for serious packages for the Sinclair machine. The firm has recently tied up the rights to *Home Budget* which will help with income tax calculations, capital gains cost, indexation, domestic bills and accounts budgeting. It costs £20 and comes on Microdrive cartridge as well as 5.25 and 3.5 inch disks. Dilwyn Jones is hoping to provide users with upgrades depending on changes in tax registration. Call 0248 354023.
- And for the **Atari ST** there's a new business package, *Double Sentry Elite*, which includes all the usual features to keep your accounts balanced and your bank manager happy. It costs £74.99 from 071 402 2836.
- *Shufflepuck Cafe*, which has done the tour of nearly every machine known, has finally arrived on the **PC**. The 'air hockey' game which pits you against several grotesques in an attempt to escape from the said cafe with your life is produced by Domark. The scenario – all you wanted to do was make a phone call, not meet the gang – remains the same. It's out now and costs £24.99.
- An independent group is to be set up for users of **Microsoft Windows 3.0**. It promises to give members all manner of useful tips through a central information database which other users can contribute to. Windows User Group can be contacted on 0909 501351.
- If you are looking for a constructive way of introducing your offspring to the **ST**, *Nought to Nine* may be worth a look. The educational package is designed to help youngsters get to grips with numbers through simple graphics and puzzles. It'll be out next month. Call 0743 249526.
- **Psion**, the British manufacturer of the Organiser range of hand-held electronic filofax products has reported a sharp downturn in profits. Last year the firm made £1.6 million, this year it was £310,000.

A computer to beat the traffic nightmare

Transport secretary Cecil Parkinson last week launched a computer system designed to help drivers avoid traffic jams.

The TrafficMaster system (pictured right) is about the size of a hand-held games machine and sits on the top of your dashboard. It is connected to a central computer in Luton which, in turn, is connected to infra-red detectors mounted on motorway bridges.

Whenever the detectors sense motorway traffic speeds of below 25mph a signal goes back to Luton and then to drivers via the Air Call radio page network. The in-car systems then begin to bleep before showing a map of the trouble spot. Drivers can program the machine before setting off to avoid irrelevant warnings. There are updates every three minutes.

At present the system – developed by General Logistics – is being restricted to the notorious M25 orbital motorway although it will be extended to other troublesome routes in the near future.

TrafficMaster is priced at £295 and will probably cost about £1.30 a day to run.

Parkinson (pictured in the inset) said it would need more than a gadget to ease Britain's traffic problems but described it as "a great invention".

Congestion costs British industry an estimated £15 billion a year in lost time and fuel consumption.

Rumours grow of 32-bit ST console

ATARI PLANS WINTER BLITZ

Despite its non-attendance at this week's Computer Entertainment Show, Atari is still very much in the news.

The firm last week announced a number of ST-based initiatives, but *Express* can reveal much more exciting plans which should be announced later this week.

• We understand that the firm is working on a 'Mega console' utilising 32-bit technology. Details are desperately thin on the ground, although it is known that elements of ST technology will be included in the new console. It will be shown at the Las Vegas Consumer Electronics Show next month and should be available here mid-way through 1991. Full details will appear in *Express* next week.

• A smaller version of the Lynx hand-held games machine is also planned (see page 3). That will cost just over £100 and *will* be compatible with existing Lynx software.

• As widely expected the price of the Portfolio hand-held business machine has been slashed by £50. Buyers can now expect to lay out a more respectable £199 for the organiser.

• A new bundle for the 520ST has been announced. The 520STE Turbo features the new ST, a BASIC programming language, *Hyperpaint 2*, *Music Maker 2*, the games creator STOS and eight games including *Indiana Jones and the Last Crusade* as well as new fantasy title *Dragon's Breath*. This all comes with a highly impressive price tag of £399 including VAT.

• Atari has announced a 'Whistle Stop Tour' of the UK – by rail.

A train is being decked out with "the largest collection of Atari-dedicated hardware and software under one rolling roof". The tour will call at six main line railway stations in October.

Atari is promising lots of competitions – and entrance is free. The tour dates will co-incide with school half-term holidays. They are: October 23, Bristol Temple Meads; October 24, Manchester Victoria; October 25, Leeds; October 26, Newcastle; October 27, Glasgow Central; October 29, Birmingham International. More details nearer the dates.

Women troubled by 'whining' computers

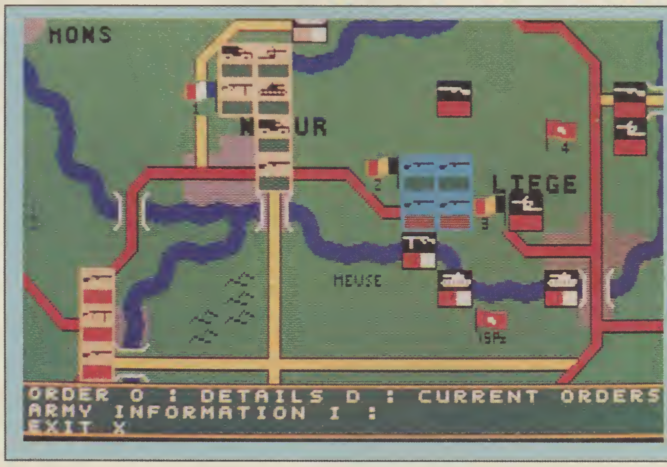
Scientists in America claim to have found a link between noise emitted from computer VDUs and stress related illnesses in women.

Females are able to hear sounds at higher frequencies than males. It is claimed that high-frequency whines from computers, which are inaudible to men, will cause stress in women.

The studies also seem to prove that these sounds are produced by most American made computers.

Caroline Dow and Douglas Covert carried out experiments at the University of Evansville in Indiana which seem to have proved the point. Two groups of people were given tasks to carry out; the group exposed to the whining computers achieved ten per cent less than the other group, who were not.

The upside to the affair, for the wealthier computer users and monitor makers at least, is that high-resolution monitors give such high frequency sound that is beyond the range of human hearing.



Play at being a fascist

In May 1940 thousands of German panzers and mean stormtroopers were blasting their way across Western Europe wiping out everything in sight. With the exception of a few psychotic nazi generals it was not a terribly pleasant time for anyone.

Now's your chance to change history from the comfort of your micro. *Blitzkrieg May 1940* is the latest war strategy offering from Ken Wright. He has already produced military favourites such as *Overlord*, *Pacific War*, *Napoleon at War* and *Stalingrad*.

Published by Impressions, *Blitzkrieg* puts you in the jackboots of those same generals planning the defeat of the unfortunate British Expeditionary Force and French Army.

***Blitzkrieg* will be out in two weeks on the ST and Amiga for £24.99.**

Amiga Professional features Workbench with 1Mb

NEW AMIGA SET FOR 1991 LAUNCH

By Jason Holborn and Colin Campbell

Secret details of Commodore's new Amiga have been leaked to *Express*. Called the A500-Professional (A500-P) it will come with 1Mb of RAM, the full Enhanced Chip Set and the impressive Workbench version 2.0.

Commodore sees the A500-P as the natural successor to the existing 512K machine. However, for at least the first year of its existence, the new machine will be sold alongside the original model.

Sources suggest the A500-P will be available here next September with a £499 price point – £100 more than the current Amiga 500.

In America, Commodore is already selling a product called the A500-P which is simply an Amiga with 1Mb of RAM. It comes with a number of serious software packages which take advantage of the extra RAM. Insiders suggest this is merely a trial run for the fully fledged A500-P which will be fitted with the Enhanced Chip Set (ECS).

It is Commodore's wish that all Amigas should be fitted with the ECS as soon as possible.

Also, Commodore is waiting for the last bugs and inconsistencies in Workbench 2.0 to be ironed out before it can be included with the mass market Professional.

Workbench 2.0 is far more sophisticated and user friendly than its predecessor, and has been greeted with almost universal praise, but it is currently only available for the 'multimedia' Amiga 3000.

Commodore believes there will be few incompatibility problems with existing Amiga software. This will pave the way for a smooth transition for upgraders from the A500 and will allow first time buyers full access to the multitude of Amiga software currently available.

• *Running Workbench 2.0, boasting 1Mb of RAM, and with the Enhanced Chip Set, the A500-P will be a more than satisfactory follow-up to the current model.*

Already, many software developers have released games which will only run on an Amiga with 1Mb of RAM. This is in response to the large number of A500 owners who have fitted an extra 500K of RAM into their machines. That operation can cost as little as £50.

But the A500–P will not just be an A500 with extra RAM. The ECS offers facilities for 1Mb of chip RAM as well, which will lead to improved graphics and sound capabilities.

Commodore UK has denied that any plans are underway for an improved A500. Spokesman Andrew Ball told *Express*: "It's absolute speculation and hype. I have not heard of the machine and we have not discussed such an option." On the £499 price point he said: "If there were such plans *we* would decide the pricepoints. Not your sources in America."

The Amiga is having an extraordinarily successful year. Commodore knows it is riding the crest of a wave and reckons on attaining a UK installed base of 500,000 by the end of this year.

Even arch-rival Atari secretly admits that 1990 is the Amiga's year. But Commodore's plans stretch well into 1992 and the firm has seen the need for a more sophisticated offering. ▪

• *Fastest yet: the new Archimedes.*

Super Archie arrives

Acorn has launched a new flagship Archimedes which is claimed to run at up to five times the speed of its predecessors.

The A540 is based on Acorn's much-vaunted ARM-3 RISC processor – capable of speeds outstripping Intel's 25MHz 486. The 30MHz ARM-3 features an integral 4K of cache memory speeding up the machine's performance level of 13.5MIPS (Millions of Instructions per Second). A standard 4Mb of RAM is supplied, expandable to 16Mb.

Acorn's managing director Sam Wauchope commented: "The speed of our 32-bit ARM-3 technology and extensive memory capacity makes the A540 an ideal desktop solution for a wide range of computing applications." It costs £2,995.

The machine was launched at last week's *Acorn User* Show along with a new 'adult' education bundle for the established Archimedes 420 machine.

The Learning Curve features word processing, desktop publishing, art, music and graphics software as well as a PC emulator and an explanatory video.

This new offer costs £1,299. ▪

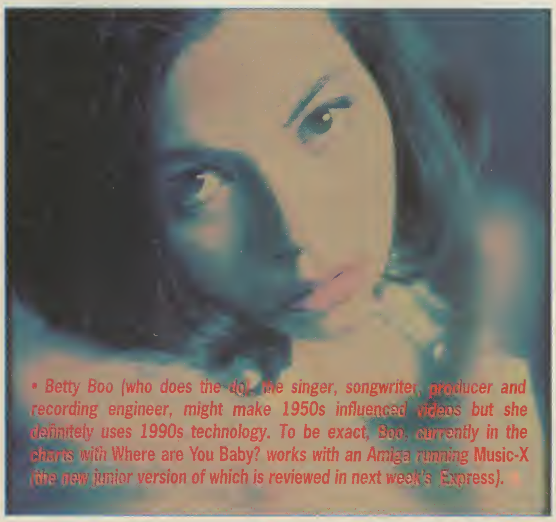
Earls Court CES – don't miss it!

If you are interested in games and can get down to London this weekend don't miss the Computer Entertainment Show at Earls Court. It starts at 9.00am on Saturday and Sunday closing at 6.00pm and 5.00pm on each day respectively.

It's easy to get there – just jump off the tune at Earls Court station. Trains from the North West and South East also go directly to nearby Kensington Olympia Station. But don't get confused with Olympia the venue and end up in the wrong place.

Earls Court is also served by buses. The 74 and 31 routes will get you to the Warwick Road entrance while the 74 and 30 will take you to the West Brompton end.

While you are savouring all those games remember to pop by and see *Express*, and especially Tim Smith, at the Future Publishing stand. ▪



• *Betty Boo (who does the do), the singer, songwriter, producer and recording engineer, might make 1950s influenced videos but she definitely uses 1990s technology. To be exact, Boo, currently in the charts with* Where are You Baby? *works with an Amiga running* Music-X *(the new junior version of which is reviewed in next week's* Express*).* ▪

Thais' Big Brother

The Government of Thailand has ordered a computerised database system which will be able to track and cross reference information on every single one of its citizens.

Every Thai adult will have to carry an ID card with Population Identification Number, computer readable thumbprint and photo as well as personal data on the smart card.

The director of the central database said: "The people feel that the system will protect them."

There are no plans to introduce such a system in Britain... yet. ▪

Computers in your blood

Japan's Ministry of International Trade and Industry is embarking on a nine-year research project to study 'micromachines' – computers or robots tiny enough to travel through the body to repair tissues.

Although it sounds uncannily like the sci-fi movie *Inner Space* this study into 'nanotechnology' is perfectly serious. The budget for the project is 25 billion yen (£85 million).

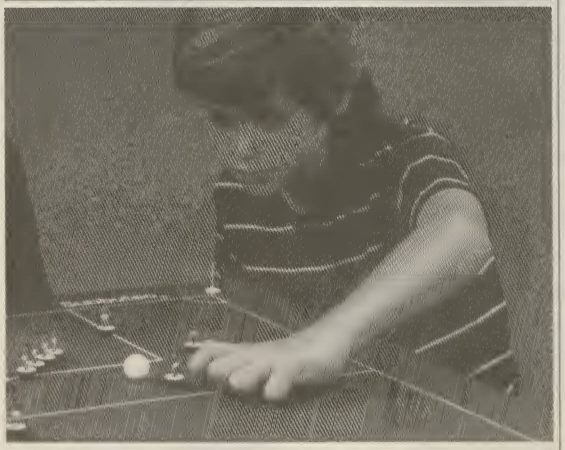
The study will concentrate on techniques for the manufacture of micromachines and the creation of prototypes for other uses besides medicine – similar miniaturised technology could also burrow into crevices to repair cracks in nuclear power stations or jet engine turbines.

Micromachines were pioneered in the USA by scientists at the University of California who developed an electric micromotor with a central rotor smaller than a red blood cell.

IBM is also working on a nanocomputer which, according to the company, will "incorporate single pieces of technology of less than a billionth of a metre across".

Remarkably, the nanocomputer needs a mechanical power source because electricity upsets the balance of reactions. But the tiny size of the computer would compensate for the theoretical slowness of a mechanical system.

TABLE MANNERS



If you're one of those kids who spent hours flicking little plastic men across a baize table you'll know what an infuriatingly brilliant game Subbuteo can be.

***Excellent news then that the long-awaited computer version will be with us within a few short weeks. Subbuteo has been programmed by Goliath Games which also created* Tracksuit Manager *and* World Boxing Manager.**

It will be launched on all major formats at the end of this month but publisher Electronic Zoo reckons the 16-bit versions are extra special. The table top can be viewed from several angles à la 3D Pool and there's a zoom-in zoom-out facility. Prices start at £9.99 for Speccy, CPC and C64 versions with PC, Amiga and ST formats weighing in at £24.99.

Cops caught by the act

Police sergeant Keith Hassum was stunned to discover that after his 20 years of service the constabulary computer showed a massive 18 pages of complaints against him. As far as Hassum was concerned, he had a clean sheet.

It was not until he made use of the Data Protection Act to examine his computerised personal record that the mistake came to light.

The complaints concerned violence against prisoners and other forms of conduct unbecoming. But following investigation it appears that the complaints were against another officer with a similar warrant number.

Exercising his legal right to examine his own files has done no good in rebuilding a career which Hassum feels has been marred – two promotion applications were refused – because full access to the complaints had not been given. The sergeant was told that the full files had been lost or destroyed over the two decades.

He has not been offered any compensation for this. Merely an apology from the deputy director of the Police Complaints Investigation Bureau.

WANT TO HEAR SOME CONSOLE NEWS? Turn to The Console Zone on page 48

New trio of Generation 3 PCs with sturdy metal

AMSTRAD – THE

Amstrad has launched a new range of PC compatibles aimed squarely at the quality end of the market.

The Generation 3 series of IBM compatibles comprise three models – the PC3086, 3286 and 3386sx. Amstrad is confidently describing the 286 and 386sx as being "among the fastest machines available in their class" with the latter claimed to be capable of benchmarks clocking in at over three times the speed of an IBM AT.

For the first time Amstrad has introduced sturdy metal cases. It is also placing an emphasis on "component testing and quality control" with comprehensive support programmes being introduced nationwide.

• Sugar: "build integrity with keen pricing".

Prices start at £549 for the single drive PC3086 with 12-inch mono display. That machine clocks in at 8MHz with 640K memory. Unlike all the other models there is no memory expansion. Buyers will be offered a choice of either 720K 3.5-inch or 360K 5.25-inch drives.

A single drive 286 model with 14-inch mid-resolution colour monitor will cost £849. That comes with 1Mb of memory and can clock 16MHz flat out. It has an 80287 co-processor socket with anything up to 16Mb memory expansion.

At the very top end of the range is the 386sx which, with 40Mb hard drive and 14-inch hi-resolution colour monitor, costs £1,599. The 32-bit machine comes with 1Mb and can clock 20MHz.

Amstrad says it has opted for

All you need for business

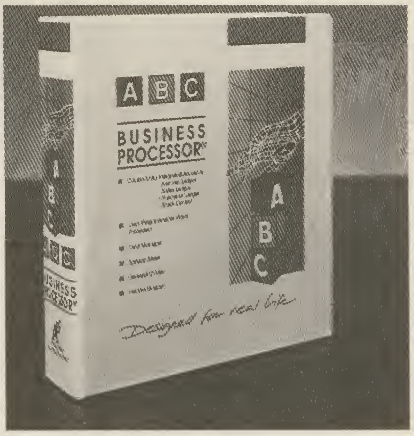
If you are looking for a top-notch business solution for the PC you could do worse than ABC's *Business Processor*.

The all-in-one package integrates a double entry accounts package with stock control and payroll. There's a 64,000 record database and a word processor with full customising facilities. Users can configure the keyboard to to emulate the operation of any word processor around. There's also a spell checker.

The integrated spreadsheet offers 600 rows by 255 columns and comes with business graphics capabilities.

At £445 it's most definately not the cheapest integrated package on the market. But ABC says this is not a bundle of budget solutions but a user-friendly package of top-notch programs claiming that the accounts package alone is "worth a grand".

Managing director Shirko Abid commented: "Why should people have to buy separate packages to manage their business? That means word processors, spreadsheets, databases and the rest, often with incompatible commands and duplicated features. We believe in combining simplicity of use with full functionality." For more information call 061-236 9065.



• Business Processor *does the business.*

Mice move on up

Major mouse manufacturer Logitech has unveiled yet another addition to its Series 9 range of computer input devices. The Bus Mouse Professional comes with PC graphics editor* Paint Show Plus *and costs £85. Also, see your dealer about new low prices for established PC peripherals from Logitech.

metal cases foster a growing Amstrad reputation for quality

HE NEW GENERATION

the 386sx standard because although the faster 386dx is "rather more specialised" it can already be obtained by buying the old full bus PC2386.

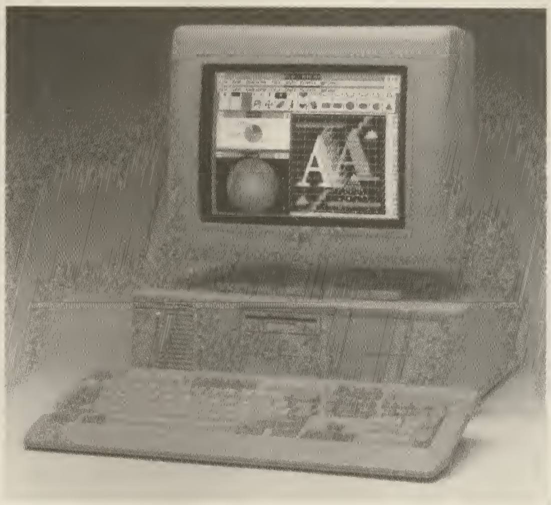
Chairman Alan Sugar commented: "The Generation 3 range is aimed at the professional user throughout Europe. Accordingly, we have designed the range to the highest European standards so that it will be equally relevant throughout the breadth of the continent."

Sugar explained the thinking behind the new machines: "We have taken a long hard look at this project from the start, and have produced a range which has real 'build integrity' and keen pricing."

He said the range had been designed by the same team responsible for the popular ALT portable line up. "I am confident that the same measure of acclaim will greet the Generation 3 range," he said.

This marks the widely expected diversion from the old Amstrad approach of bringing together a cheap option for people who really want the basics. Still, the pricing is more than reasonable given the tech specs, back-up and increasingly respected Amstrad name. ▨

• The Amstrad Generation 3 range will be reviewed in next week's *New Computer Express*.



• Right: The Generation 3 386sx machine: quality stressed.

NIBBLES

- A virus double pack is currently being offered to cautious **PC** owners. Microcom's *Virus PC* comes on two disks and can detect the presence of up to 70 DOS based virus strains. It costs £95 with upgrades promised. Call 0483 740763.
- Classic board based wargame *Stratego* is to be brought onto major computer formats next month. The Accolade game is based around capturing the flag of the opposition with the aid of heavyweight military hardware, soldiers and devious spies. Prices start at £9.99 on the **Spectrum** and **CPC**, rising to £24.99 on the **ST** and **Amiga**.
- Buyers of **Compaq** LTE 8086 and LTE286 portable PCs are finding mysterious cracks appearing on the cases of their machines. The embarrassed company says owners experiencing "crazy paving" effects on their machine should see their dealer.
- A new "vandal resistant" **joystick** has been launched by Solid Gold. The Multicoin has a claimed "minimum life span of 6.5 years" under normal use. It comes with a three year guarantee and costs £29.95. Call 0389 55973.
- Groupe Bull, which bought PC manufacturer **Zenith** last year, has lost $331 million for its first six months of 1990.

Feds seize 'sensitive' second-hand computers

Agents from the FBI have seized second-hand computer equipment from a legitimate dealer – because the machines had been used by the US Government and still contained what was claimed to be sensitive data.

The Feds confiscated nine terminals, a central memory bank and other equipment from Kentucky based dealer Challenger – a firm specialising in re-selling old governmental computer equipment.

Its boss, Charles Hayes, had bought the equipment from the US attorney's office in Lexington, Kentucky for $45. However, he did not know that they contained any sensitive information .

The FBI had become extremely nervous when it emerged that a technician had failed to wipe documents which included details about FBI informants, protected witnesses and personal information of employees of a US attorney.

The US Justice Department had filed a suit against Hayes saying that the files, if made public, would cause "great harm and irreparable injury" to the work of US prosecutors. The suit went on to claim: "The seriousness of the injury to the United States of America cannot be understated."

Hayes has retorted calling the affiair "the worst case of bureacracy I have ever seen." Hayes said he would have turned the computers over anyway adding that there was no need for a nine hour search of his premises. ▨

(Associated Press)

Band on the runtime

***Band-in-a-box* is a new software system allowing your computer to produce "automatic accompaniment in 24 popular styles".**

The program allows the user to create songs using standard chord notations such as A#m9. Up to four chords per bar can be typed onto a screen which represents a standard musical scoresheet. The songs can then be replayed using MIDI. You can also get MIDI Fake disks containing 250 prerecorded songs.

Band-in-a-box plus a Midi Fake costs £69.00 for the ST, PC and Macintosh. Call Zone Distribution on 081-766 6564 for more information. ▨

Arc write

Archimedes desktop publishing and word processing are to be given a boost with a product called *Desktop Folio*, launched at the *Acorn User* Show last week.

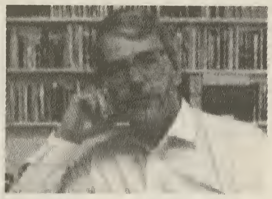
The system has two levels: the highest is DTP mode with full RISC-OS support. The lower level is a basic word processing unit with some DTP aspects. Both levels have font libraries, stock layouts and art work. It costs £90. More on 0223 65445. ▨

Double speed

A Japanese company has developed a new floppy disk drive which can read, write and format a disk at twice the speed of current drives.

Y E Data's drive works on the simplest of theories – the unit rotates at twice the speed of conventional drives. While the operating speed of hard disks and optical drives have increased dramatically little work has been done on floppies.

Y E Data will be selling the drives for 35,000 yen (about £150) and expect to shift 3,000 units every month. As yet, no UK distribution deal has been tied up. ▨



• John Major: one in a million PCW users.

The PCW is five

The Amstrad personal computer wordprocessor – the PCW to the rest of the world – is five years old. Not bad for a machine which many people wrote off as outdated and cumbersome when it was launched.

It still ran CP/M when everyone else had moved over to MS/DOS, it had a green on black screen, and its built-in printer beavered away at what seemed to be two miles an hour.

Of course, over a million people have bought, and have been writing on, the range of machines since the the launch of the 8256 in 1985.

Five years on and the three PCWs – the 9512, 8256, 8512 – which make up the range have managed to maintain a thriving sub-industry. Companies like Locomotive Software have grown from small time operations into respected software houses on the back of the machine.

Variously known as a workhorse and a souped-up typewriter, the PCW is basically the Mini Cooper of the computer world, and it looks set to go on and on. ▨

Department of Serious Stress

When a computer crashes the usual reactions are panic, then fury followed by a dreadful pang of resigned melancholy.

Spare a thought then for the Department of Social Security. Its ICL 3980 mainframe, which runs the index with the name, address and national insurance number of every British citizen, crashed for two and a half days recently.

The mainframe, in the department's area computer centre in Washington, Tyne and Wear, went down from Monday August 13th to lunchtime the following Wednesday affecting retirement pension and income support systems in every computerised DSS office.

This was especially unfortunate for new claimants desperately waiting for their benefits to be processed.

One member of staff said: "Hardly a week goes by without some problem, but that was exceptionally bad." ▨

THE WEEK IN VIEW

This week's view is from the Editor's private virtual beach....

From now on we're ditching the old Comment page and replacing it with regular guest opinion columns. We have all kinds of commentators in mind – industry bosses, informed insiders, in-house humourists, programmers, promoters and PR personnel. Anyone and everyone who knows what they're talking about and isn't afraid to say it. This week though we haven't had time to invite any one along to give their opinions so you're getting mine instead.

So, I'd like to kick this little section off by saying, "Come on, Autodesk! Where's my free ticket to the Californian Cyberspace Labs?".

Reading the futuristic features this week, you may notice that Autodesk has patented William Gibson's 'Cyberspace' as its trademark. No, not to make a mint for itself but to prevent any other mega-corporation from cashing in on a term that should remain public domain.

Autodesk is well known as the world's biggest CAD company – making a reputed $170 million each year. Indeed it has some 1,500 third party developers working worldwide on custom extensions to its main 3D design package. So you might reasonably assume it has enough money to commercialise the new dimension. For that's what virtual reality will become.

And it seems to me there will be a massive corporate market for it aside from the obvious leisure applications.

So, I'll wager a bet with you. You know that today, companies can supply you with remote offices? - secretarial, phone and fax services that you don't even need to occupy? Well, I bet by 1995 there will be mahogany panelled virtual offices that you can conduct business meetings in face to face without either party even being there. Who knows, soon after, *New Computer Express* might even have it's own virtual pool-side office with virtual bikini clad girls propping up virtual palm trees. And then you can come along and pay off the bet you lost with a little virtual cash. See you there.

BUT BACK IN THE REAL WORLD

Okay, so by now you'll have noticed. Yep, the price has gone up by 12p – the first rise since issue 27 with its 40 pages, some 18 months ago. While my simple DA calculator tells me that's a17% increase – my man at the FT argues that inflation over that period would account for a 9p rise. And there's now 76 pages an issue. So there's an easy bit of maths for you. For an extra 3p you're getting an extra 36 pages each week. So, whereas 18 months ago, a page was costing you 1.45 pence it's now costing you 0.92 pence.

Suddenly, a rise is no rise at all. Great stuff maths, innit?

Andy Storer

Express Access

Hey! Get in touch with us! *Express* is always on the look out for news leads and tip-offs – and we'll pay you for passing them on too!

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EXPRESS MAIL

With your new and regular host, Hadyn Fitz-Williams, the man with the fivers to give away...

Write and tell HFW what you think about anything under the Sun! Reach him at: *Express Mail, 30 Monmouth Street, Bath BA1 2BW.* Sorry, no personal replies, even with an SAE, as we're too busy writing the magazine.

Boy Racer Blues

Having 'almost' got an ST Power Pack, I can 'almost' fulfill my craving. I am desperate for a good motor racing simulation – I don't want an *Out Run* clone or something like *Hard Drivin'*. What I want is something where you are plonked firmly in the driving seat. Something akin to *Revs* but something with slightly better graphics.

You've managed reports on other sims – tennis, golf and so on – so come on. Give us a clue.

WJS Clitheroe Lanes

Not being much of a driver myself (I own a diesel Fiat Uno), I'm not the man to hand out such advice. But five seconds in the company of our games guru Mark Higham elicited all the information you might need, WJS.

Ferrari Formula I from Electronic Arts or *Fast Lane* from Artronic should fulfill your cravings – and you might like to check out a couple of titles from MicroProse: *Stunt Car Racer* and *RVF*. And if you're reading this while you're wandering around the CES Show, make sure to drop by Gremlin's stand and take a good look at *Lotus Turbo Esprit*. You can get the furry dice and driving gloves from any good auto accessory shop.

But you really are going to have to buy an ST first, you know... there's nothing worse than unrequited automotive lust.

Anyone out there like to send in their 'Top Ten Driving Games' chart or proffer alternative suggestions?

H F-W

Vocal minority

Thank you for printing a reduced form of the letter I sent in last time. But wouldn't it have been better to have printed it over several issues – so as to have given a fair hearing to all those Atari XEers out there, also to show that your publication is not totally ignorant or trying to insult the Atari 8-bit user base. Or is you mag one of those 'anti Atari 8-bit people' (just like your Mr Kennet)?

I am sure that if you started to support the Atari 8-bit as well as you support the Atari ST you'll have more Atari 8-bit users contributing to your mag, which is what you want , isn't it? Which means that you would sell a few more copies. I am sure that if you were to ask your readership, they would agree with me.

Assuming that a majority of your readership uses 16-bit things, who used to own Atari 8-bit, by not supporting the Atari 8-bit you not only insult or upset Atari 8-bitters everywhere, but you also insult those who used to own Atari 8-bit things and also you yourselves are not proper Atari supporters in the real sense in that you only seem to favour a certain aspect of Atari's product range proper. Atari supporters/users are those who genuinely support Atari corporation and the whole Atari product range as one, and that they do not slate or slag off certain aspects of Atari's products. A look inside *Page Six Atari User* will show you what I mean, so please start supporting the Atari 8-bit and perhaps you might just get a mention in an issue of *Page 6*. But most importantly we will support you so let's have our XE column back.

C Andrews, London.

Phew! You've just won the 'longest sentence ever printed in *Express*' competition, Mr A. Well done. A crisp fiver is on its way to you.

No you can't have your Atari XE column back – and I don't care how many letters on the subject we receive. On *Express*, everyone agrees, the XE is a lovely, cuddly machine and we can't deny that owning an XE is about five million times more fun than not owning an ST and yet still wanting to play racing drivers on one. At least you're better off than Clitheroe Lanes. But the XE isn't all that amazingly exciting any more.

New Computer Express is not, has not been and never will be a 'true supporter of Atari corp' in the sense that you suggest. Nor should we be. And any owners of 16-bit, or even 8-bit 'things' out there who feel insulted are just going to have to live with that decision and start reading *Page 6*. The magazine, that is... or watching *Antiques Roadshow.*

Owners of 4-bit 'things' who have upgraded to the XE or any other computer are also going to have to live with being miffed. On the up-side, owners of 32-bit 'things' can look forward to a regular weekly page on the Acorn Archimedes, as of this issue.

H F-W

'Proper' Charlie?

Let's get this console thing sorted out once and for all.

A console is a machine (not a computer) dedicated to games playing. A computer has almost unrestricted abilities. Even the Spectrum, which is undeniably a games computer, is capable of word-processing and the like.

If consoles were allowed to run riot over the pages of *NCE*, it would upset the balance of the magazine and turn it into the sort of games magazine like C&VG, and who wants to see *NCE* like that?

Now, if an 'add-on' became available for a console that effectively turned it into a computer, then that would be worth a mention in the news section, since it is a computer subject and not a console-what-nice-graphics-on-that-game-shame-that's-all-it-does subject.

If such an 'add-on' became as popular as a Spectrum, C64, Amiga or ST, then it would certainly rate having a column of its own, but still then it should stay out of the way of 'proper' computers.

If console owners are so numerous and desperate to get into print, why don't they have their own mag, and if they do, why don't they write to that instead? Also, if console owners are to persist in hassling computer mags into including them, I want to hassle console mags into including computers in their pages.

Mark Beevers, Castleford

More congratulations are in order Mark. You collect the prize for 'The longest composite word ever used in *Express*'. Look out for your crisp fiver.

Much of what you say makes sense Mr B, although you do seem to be verging on the edges of Hardware Apartheid. Lots of people have lots of fun using their state-of-the-art technowonders to do no more than play games, and consoles have got a lot to offer. (There are plenty of times when I wish the Mac IIfx on which I compile these pages was bereft of keyboard and mouse and could only support a joystick or two.)

Some consoles can go a long way towards emulating the boundless possibilities of a computer – the Nintendo Famicom, for instance in its Japanese incarnation can support disk drives and there are rumours about modems and keyboards. Then there's the NEC PC Engine, that can run a compact disc player/CD-ROM drive as an audio unit with joyful abandon.

You'll have noticed by now (unless you are reading this issue through a chip supper) that we have made a few changes around here. One of them should go part way to cheering up both you and like-minded computer people AND the console owners clamouring for space. Starting this issue, there's a regular weekly console page.

But in the end, Mark, there's no such thing as a 'proper' computer. As they say in certain circles: "it's not what you've got, but how you use it."

H F-W

Mystery explained

Look in the financial section. 'MSFT' is the abbreviation for Microsoft on the American NASDAQ stock market information system. Something like National Automatic Stock Dealing and Quotation System'.

P Pratt, Luton

Which probably accounts for the reason that American stockbrokers were described as 'being completely NASDAQered' after the Black Monday crash of a few years ago. Well, well, well.

H F-W

Cryptic clues...

Having read the article in Issue 95 about the British technology in Iraq, I felt that I should point out a couple of details concerning data encryption and the US Government.

In the article, you say that *PKZip* (produced by Phil Katz in the US) is an encoding program banned from export from the US and that it has become available outside of the US through shareware. You intimate that this has serious undertones.

In fact, *PKZip* is an archiving program with a facility for encryption of archived files. It is true to say that the US government has banned the export of programs which are able to encrypt data – they have a specific export control law that does not distinguish between a specific cryptographic algorithm. Thus it appears to apply to any program that encrypts data.

This is an unfortunate state of affairs

– the encryption technology used within *PKZip* and a large number of other utilities is based upon publicly-documented techniques (DES in the case of *PKZip*). In the US, it is illegal to export these programs. Taken to the extreme, all bulletin board operators in the US and Canada may be inviting legal trouble by offering any program that encrypts or decrypts data if there is any chance that someone from another country might call and download the file.

This discussion is not meant to single out *PKZip*. As I mentioned earlier, other archivers such as SEA's *ARC* and NoGate's *PAK* also encrypt data.

Andrew Hardy, Eldwick

W7ynn knt7c 908sne23 1230 Id.O)nw e3k. snw12lk mne. Which decrypts to 'What a can of worms!"

There are so many legal issues surrounding the use of computers these days that it's sometimes difficult to know how to stay on the right side of the law. But governments are funny old things when it comes to protecting their secrets – I remember when a new design for a mouse was submitted to the UK Patent Office a few years ago, and the British Government attempted to clamp down on the rights to the device via a catch-all clause in the Patent Act that allows the Powers That Be first rights on anything that might have defence or security implications. (The inventors, un-phased by the threat of heavy fines promptly went and told the whole story to Central TV and attracted zero interest from MI5.)

Anyone else got details of any weird and wonderful implications of owning a computer that they would like to share? There are plenty of crisp fivers in my wallet...

H F-W

■ Buttoned-up

S Waldron (issue 95) writes that the Apple Mac is a more powerful machine than his Amiga. How can this be so? A basic Amiga 500 can emulate a Macintosh almost perfectly using the software-only version of A-Max. All but the most expensive Macs can't multi-task, have negligible sound capabilities, only one mouse button (massively limiting the WIMP interface) and small, flickering, black and white displays.

Because of these hardware limits and its unbelievable price, the Mac is suitable only for publishing applications, for which it is no longer the unchallenged leader due to excellent Amiga DTP applications such as *PageStream*.

Jim Blackler, Lancaster

Pshaw and piffle, dear boy! While the Amiga is a worthy contender in the DTP marketplace, the Mac has got it thoroughly sewn up – in the Mac world there are more fonts, more powerful page-make-up packages, more powerful image enhancement packages and porkier peripherals all round than there are ever likely to be for the Amiga.

But I'm just a teensy bit biased, as the owner of a Mac IIfx with 32-bit Quickdraw colour. Even if there's only one button on my mouse. Sure, I can only afford to drive that Fiat Uno as a result of spending all my money on a Mac, but who cares? At least diesel cars are more environmentally sound.

H F-W

■ Rational thoughts

It is nonsense to suggest (Comment, Issue 94) that just because someone has succeeded in emulating a small part of the ST's design that the Amiga is therefore 'significantly more powerful'. In virtually all respects, other than colour graphics and sound, the opposite is true.

I don't believe there is anybody out there who considers the two machines to be competitors in anything other than the low-end home computer market. They are as apples and pears by comparison.

Like many others, I bought my ST because I really wanted a Mac but couldn't afford one. Also, like many others, I discovered that I now didn't need one – the ST provided me with ample power for a fraction of the price. What most people seem to overlook when they weigh up the merits of the ST is the fast DMA port and the Atari laser. These two features, combined with the unparalleled clarity and sharpness of the mono display combine to make the computer into the superb DTP engine that it is.

I agree that we still need a lot more serious software, but to assert that the ST is in jeopardy just because you have seen more of it for the Amiga recently is surely to miss the point. The only thing the ST needs is for Atari themselves to believe in and promote the serious aspects of the machine more seriously – more sales and developers will come running.

One more thing – it's now possible to buy an STE with 4Mb of memory for only £599. If Atari pushed it more forcefully, nobody in their right mind would touch the 1Mb Mac Plus at its current (and recently reduced) price of of £800. Compare this with a mono monitor, 20Mb hard disk, Atari Laser, *Fleet Street Publisher* V3 and Font Pack (including over 40 fonts), and at just over £2,500 you have the cheapest, most powerful computer/PostScript printer set-up on the market.

Bill Barrett, London

Good points, Bill. And here's a fiver – nay, four fivers, for writing this week's most lucidly-argued missive.

But it all boils down to what you want to do with a computer, how much you can afford to spend doing it and how much additional power and flexibility you want to be able to add on to your system. The ST system you describe is certainly excellent value for many 'DTP' purposes but you'd be a bit stuck if you wanted to get into some industry-standard power-publishing.

Just you wait until the new range of Macintoshes are announced – for around £1,800 – I'll bet you will soon be able to buy a 256-grey-level monitor and the equivalent of a Mac IIcx.

But enough of this high-end chit chat. On to another correspondent with a totally different set of problems...

H F-W

■ Completely hatstand

I have for some time now been investing in upgrading my present computer system. I've increased the memory sixteen-fold, added an expansion box, high resolution monitor, floppy disk drives, hard disk drives, a WORM drive and even a 5Mb PostScript laser printer.

Recently, I have been trying to contact the company that originally sold me the computer, with regard to enhancing its graphic capabilities, but to no avail. So maybe you or one of your readers could advise me. Is Sinclair Research likely to produce a colour graphics adapter for the ZX81, or should I upgrade to the Vic 20?

Craig Wignall, Barrow-in-Furness

Maybe you should move from Barrow-in-Furness to Completely-off-trolley. Here's a fiver to assist with moving expenses.

But if any readers have got a REAL computer system that has been ridiculously expanded, drop me a line and let me know. Better still, send me a picture of your over-peripheralled powerhouse. There's plenty more filthy lucre where Craig's fiver just came from...

H F-W

■ AMOS plea

I can't really comment on the quality of AMOS as a programming language, as I'm still working through the manual. One thing is for sure, Amiga BASIC is about as user friendly as an Arab court prosecuting a drinking offence. By comparison, AMOS is just 'point and go'. Anyone out there considering buying AMOS should shake the moths from their wallets and do it.

The main shortcoming in the package was the lack of a quick run-down on the examples and what they do. It would have been easier if Mandarin had included a pamphlet listing the disk examples and their function as part of the package – but it's only a minor niggle.

I used to have H.U.R.G. and another games maker on the Spectrum, and they could hardly stand against Sinclair BASIC, so in the unlikely event that Mandarin does an 8-bit version, it should be a best-seller.

Bill Fox, Matlock

Fair point Bill. But did you try prodding the HELP key? Go on, give it a prod next time you load AMOS – you'll find most of what you reckon is missing in the online help facility. Not a lot of people seem to know that!

And there's more... Mandarin is aware of your niggle, and if you or anyone else who owns AMOS send your registration card back to Mandarin HQ you'll get an extra disk that contains a shoot-'em-up and a 36-page supplementary manual that clears up all the perceived 'omissions' in the original document... Good old Mandarin, eh?

H F-W

MAIL SHORTS

■ Budget lobby

With regard to your story about budget price rises... 70 per cent of our stock is budget – £2.99, and £4.99 16-bit. We do have ALL the Top Twenty full-price titles on 8- and 16-bit, but they do not sell. Budget SELLS. We will be actively lobbying distributors to keep budget titles at these prices – we sell around 400 or 500 budget units per store, per week.

Oswestry Computer Centre

Well, anyone else think budget prices should rise – or fall? There's obviously not a lot of margin for the publishers, wholesalers or retailers in budget games, but they used to be well popular. Drop me a line...

■ Digging deep

I've come to the conclusion that anything I write to this magazine gets published. In issue 94, you published my address on the Tech Tips page. Great! Now every weirdo in the world writes to me. Everything from human lamp shades to people with MSXs!

I'm pretty convinced that if I wrote in with a letter saying "Utopia is the only solution to a society obsessed with deviance..." you'd publish it!

'Bob The Miner', (address withheld)

Whatever gives you that idea, Bob?

■ Mail-order blues

Please sing this verse to the well known rock and roll classic, *Runaround Sue*...

Here's my story, it's sad but true
About a company that I once used,
They took my cash, and gave me the runaround,
With every excuse in town...

S Adams, Aylesbury

Consider it sung, Mr A.

■ 8-bit glasnost

...I happen to own an Amstrad CPC464 (yes, 8-bits) and I wouldn't mind owning an A3000 and Amiga simply to marvel at the awesome graphics and ultrafast clock speed, but would I be able to do what I WANT with it?

Besides, I have come to the conclusion that 'bits' do not matter. Reading letters like Mr Kennet's and Mr Hill's dismays me, and I hope that I and others will continue to respect those who, like we used to, still own a trusty 8-bit.

Shabaz Yousif, Slough

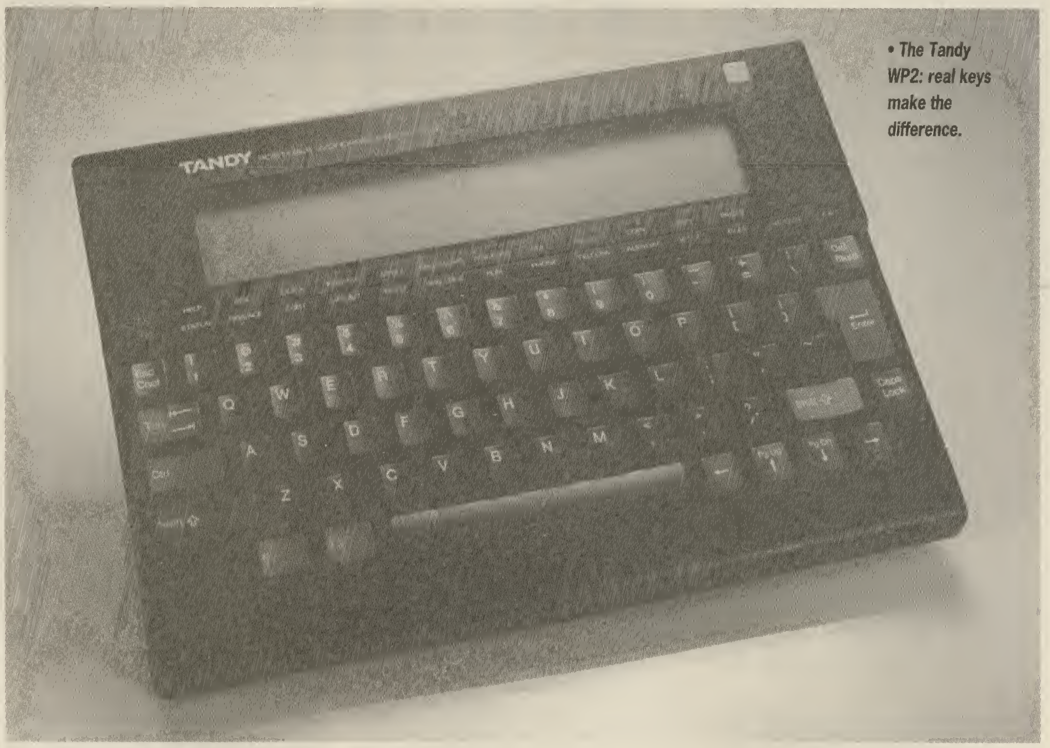
Exactly. It's all computing, and it's all fun. Even if your prime computer is an Atari XE.

H F-W

THE BEST BUDGET L

Tandy's new WP2 takes the old T102 laptop and makes it into a real word processor, with a spelling checker and thesaurus built in.

Keith Pomfret tried it out and asseses how it will compete with the similar but rubber keyed Cambridge Z88..


• *The Tandy WP2: real keys make the difference.*

The £287 Tandy WP 2 is a dedicated word processor that has an A4 footprint, is light enough to carry anywhere and has a full size, proper typewriter-style keyboard.

It looks a bit like the Z88, being the same size and colour and having the LCD screen in the same place. Appearances are deceptive though, with the WP 2 being easier to use and sturdier than the Z88.

It is based on the ageing T102 laptop, which was extremely popular among journalists and others who were forced to write on the move. That machine had a built in modem (although not an approved one), but otherwise was similar in specification. The WP2 gains a more powerful word processor with spelling checker and thesaurus, but loses the T102's BASIC programming language.

GETTING GOING

Out of the box, the manual guides you through a simple procedure to set up and configure the WP2. Like all true portables it runs from batteries, but with no power drain from hungry disk drives the WP2 can manage on a frugal four AA batteries for its main power and a watch-type battery for back-up when the system is turned off. An optional mains transformer allows you to save the batteries and run from the mains.

Once the batteries are in place and the machine is switched on, a contrast control adjusts the LCD screen to give the best viewing conditions.

A couple of function keys combine with other keys on the keyboard to access the WP 2's many facilities. An adhesive panel is provided that sticks on to the underside of the machine and provides a complete key map for easy reference.

WORD PROCESSOR

A fully functional word processor is combined with 100,000-word spelling checker, 200,000-word thesaurus, format and style routines, calendar, communications print routines and all of the text manipulation functions found in machines three times the price.

Memory is 32K, which can be expanded to 64K. While not huge, the standard 32K should hold about a chapter of text and that should be enough for most uses. The optional memory card doubles this and even the longest document should squeeze into that. This is enough for most jobs on the fly, and a cassette interface offers more permanent storage to an ordinary cassette recorder. For those with cash burning a hole in their pocket, there's an optional disk drive that connects via the serial port.

If you switch the WP 2 off, the battery back-up remembers what you've been working on and presents you with it at the next session. Printing is simple with a fully functioning parallel interface allowing you to dump to any Epson compatible printer.

If you work on the move and transfer your data back to a desk PC, the onboard comms software will make data transfer painless.

Unusual in a machine of this size is the spelling checker and thesaurus. Many times during the typing of a long document on a narrow scientific subject it was invaluable, offering alternative words and checking of all but the most

DC 6V
CASSETTE
PRINTER
RS-232C
TANDY
• *Standard communication ports allow a printer or modem to be attached, and data to be downloaded to a desktop.*

LAPTOP?

unusual. Because the software of the WP2 is on ROM and the work is held in RAM, rather than on physical media such as a disk, the routines to sort, check and manipulate are quick.

ON THE ROAD

The WP2 is the ideal machine for a stop-start journey. Being able to switch it on and off at will means that even the tube journey between Paddington and King's Cross was enough to pen a few paragraphs. As the tube drew up to the platform, a flick of the switch sent the WP2 back to sleep for the cross-station journey. Once on the train to Leeds, out it came, on it went and the work was ready to be continued. It doesn't weigh very much and in its soft document case it could be easily carried in a hand.

To test its portability and use in awkward conditions, it was brought back via Silverstone. A willing volunteer in the Bentley Drivers Club threw it in the back of his 'blown' Bentley and his co-driver balanced it on his lap for a session of hundred mile per hour typing. No problems were reported and as the Bentley roared off down the pit lane, the WP2 regained its more sedate place in the hired Volvo.

The WP 2 was used for a week without reference to the manual, the key map and well defined functions being enough for its test drive. Word processing, communications, printing and all its other functions came naturally. A typist without any computer experience was happy with it after a few minutes getting used to the 'flat' layout of the keys.

READING MATTER

After the test, it was time to check the documentation. To introduce the new user to word processing, and the WP 2 in particular, there's a sample session that acts as a tutorial and takes you through some of the basic functions of the machine a keystroke at a time.

The second main section of the manual guides you through the WP 2's main features and applications in greater detail. This section, entitled Tasks and Topics is a ready source of reference on each of the functions of the WP 2 and, most importantly, doesn't assume the user to be computer literate. The last two short sections in the manual are a practical guide and a glossary. The practical guide does as its name suggests and covers all the awkward little jobs, like replacing the somewhat fiddly back-up battery and general troubleshooting.

The glossary explains in simple terms some of the more computerish words used in the manual and is followed by a page on the specifications of the machine.

FINAL IMPRESSIONS

The only direct competitor to the WP 2 in the same price bracket is the Z88. Those people that were considering a Z88 as a portable word processor should divert their cash toward Tandy's coffers. The Z88 still wins as a computer, but in terms of dedicated word processing the WP 2 blows it away. Good value, a good specification and an easy to use functional layout make the WP 2 a desirable aquisition that won't break the bank. ■

THE COMPETITION

The only real competion to the WP2 is the Cambridge Computer Z88. The Z88 is almost identical in size and weight to the WP2, but suffers from a rubber membrane keyboard which is much less satisfying to use than the proper plastic keys of the Tandy.

The Z88's software is more powerful than the Tandy's, incorporating spreadsheet and database capabilities. There is no spelling checker, however. The Z88 costs £264.

MACHINE SPECIFICATIONS

Name:	WP2
Manufacturer:	Tandy, 0922 710000
Processor:	Z80A CMOS, 5.53MHz
Dimensions:	1 x1 1.75 x 8.5 inches
Power Source:	4 x AA batteries (alkaline or Ni-Cad) or AC mains adapter (optional).
Display:	LCD with contrast control 8 line x 80 characters
Interfaces:	Parallel port (25-way D-connector) Serial port (9-way D-connector) Cassette interface (8-pin DIN connector)
Price:	£287. Prices for peripherals not yet announced.

NEW COMPUTER EXPRESS OFFER

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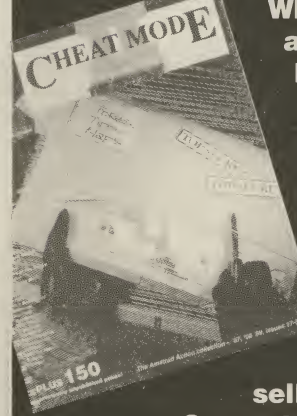

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Speed (MHz)	12,4.77	16,6	25,6	33,6
Landmark	na	20	36	58
BIOS	JUKO	AMI SX+	AMI DX+	AMI DX+
Cache RAM	NIL	NIL	NIL	32K
Cache Controller	NIL	NIL	NIL	Intel
Co-processor Support	8087	80387SX	Weitek 3167 80287/80387DX	Weitek 3167 80387DX
Mem Support	DIP	SIPP	SIPP	SIPP
Mem Upgrade	640,1	1,2,4,8	1,2,4,8,16	1,2,4,8,16
Shadow BIOS	NIL	YES	YES	YES
16-bit bus slots	NIL	6	6	5
8-bit bus slots	8	2	2	2
Dimension	Baby AT	Baby AT	Baby AT	Baby AT
PRICE (0k)	29.00	235.00	495.00	605.00
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THE SHAPE OF GAMES TO COME

We can complain about the price of games, but the days when low standards were something to worry about are gone. Our best programmers are producing astounding works which are attracting more and more people to computer gaming.

• But where is it all going? Will the acceleration in quality slow down or are we hurtling towards something really special? What will the games of the next few years be like? And, perhaps more importantly, how great a role will computers play in the leisure pursuits of tomorrow?

• Colin Campbell details the newest innovations in computer entertainment, the games we will be playing over the next half a century, and the likely consequences of vastly improved graphics techniques, CD-I and multi-player games. And what of virtual reality, cyberspace and even total neural control? It's all here, so hold on tight...

Futurists are fond of predicting worlds where computer entertainment is so intense that it becomes the sole reason for human existence. It is still only 15 years ago that people were queuing up to play *Pong*, a game which involved little more than knocking a white ball around a screen. But computer entertainment has advanced so rapidly that it is becoming entangled with the lurid promises of science fiction. So much so that a number of our more excitable commentators are unable to tell where one ends and the other begins.

We also await the impact of CD technology which offers its own possibilities for the next five years. The revolution is so close you can hear it whirl – commercially astute hardware and software manufacturers have staked their futures on this affordable technology.

Further into the future it could be that worlds created by sci-fi writers such as William Gibson are possible; worlds in which video games have become a dangerous opiate. His Orwellian overtones are being ignored by those of us hungry for the excitement of a computer-generated alternative reality. Virtual reality already exists, at a price. We are closer than many imagine.

Such are the emotions created by these huge strides forward that predictions are being made that computer entertainment will "see off television" in the not so very distant future. ➤

FUTURE PERFECT?

Everything we play is the product of what has gone before (electronically or otherwise). Most games can only aspire to mediocrity because they are little more than clumsy hybrids or clones of better breeds.

A small number of games have been crafted with skill, ingenuity, foresight and imagination and are therefore the role models for the future. They are created using experience rather than plagiarism and are encouragingly popular.

> **"It will take us two years to develop our new game for the ST and Amiga. That's scary. In two years there may not be an ST and Amiga."**
> Peter Molyneux, co-creator of *Populous* and *Powermonger*

Graphically and musically they are superb and, as reviewers and players are gleefully pointing out, they offer unprecedented levels of depth, humour and, above all, realism.

Not the kind of realism that has characters popping off to Sainsbury's for a Beanfeast, but the kind which allows sprites to act logically or on a pseudo-emotional level with which we can identify.

Damocles from Novagen and *Powermonger*, Bullfrog's follow up to *Populous,* have both taken years to create. They are simple enough to play but, paradoxically, are incredibly complex.

In both programs there is a huge amount of game code with graphics the lesser priority. They possess plot and always there is a promise of more to come. Escapism on this level is not easy to come by in any medium.

Futurists have taken this one step further and some argue that the demand for complexity, realism and intrigue will do away with the basic fun of shoot-'em-ups for good.

This is patently untrue. Murderous games will always be with us. The only difference will be increasing sophistication. *Thunderstrike, Turrican* and *Xenon II* are hardly role models for the constructive New Age of computer gaming, but behind the slaughter there is strategy and logic.

The days of wiping out waves of adversaries for the hell of it are drawing to an end. Shoot-'em-ups are increasingly searching for a reason to be.

Nevertheless, as much as we would like to believe that our tastes will reflect more civilised values, much of our popular entertainment is and will continue to be, barbaric.

Sports games, so often sneered at, are offering the best in simulation. Take the perspicuity of terrain in *PGA Tour Golf* and the delightfully addictive qualities of *Kick Off II.* To see a screenshot of the latter for the first time would hardly prompt admiration yet it continues to be the most talked about program in Britain.

> **"There are developments in the US where publishers are building Hollywood-style sets for a game. They're bringing in the best animators and the musical greats. You're talking about an investment of $1 million on one game."**
> Rod Cousens, UK boss, Activision

In Vancouver, Distinctive Software has developed a system for animating real human body movements (this is incredibly difficult). A boxing game featuring such polygons is soon to be launched.

Our passion for emulating the sports of the age will continue until computer games *become* the sports of the age. Already Channel Four is planning to screen a show based around competing gamers battling it out over the top titles. The producers of the show see computer gaming as a viable and alternative spectator sport.

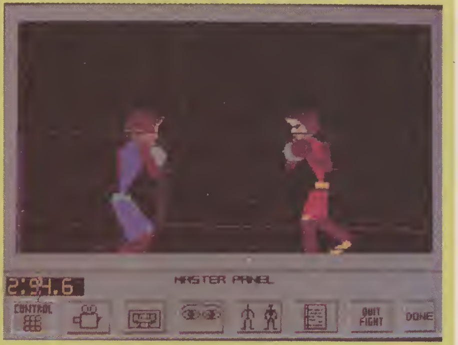
Driving games, flight sims, underwater battles and anything which involves high velocity are coming closer to the mark. Realism and depth have overtaken pretty graphics (crowds cheering and such ill-advised luxuries) as the front runner. Look again at *Stunt Car Racer* and the attention paid to dipping landscapes and rapidly changing perspectives. There is little else to offer visually but nobody complains.

Flight simulations have been the greatest challenge to programmers and the challenge is yet to be met with any real alacrity. Improvements are so rapid here that it would be unwise to suggest any of today's flight sims are great. Not just yet.

Oracle gazers have all opted for the environment simulation as the new Zeus of gaming. *Sim Earth*, the follow up to *Sim City*, will give you the power to control this planet in any one of three ages. We know the Earth and the rudiments of its progress but what of other planets and environments? Most certainly it is a prospect to relish.

And we still have the possibilities of new genres bursting out of the blue. *Tetris* from Moscow was unlike anything the ultra-perfectionist Americans, inventive Europeans or plain amazing Japanese have ever come up with.

But what of the next generation of programmers, those who have only played games written by people born before *Space Invaders*? They have yet to have their say.



• Realistic motion will become the norm in sports games.

HYPERGAMES ARE HERE

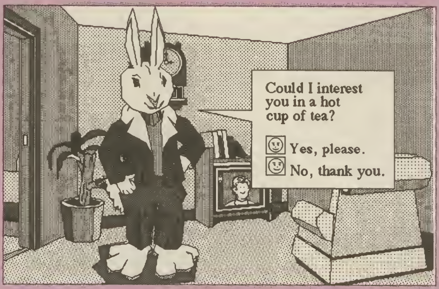
Traditionally, games have had a pre-defined objective and are linear based. Not so with hypergames. They defy definitions and appear to have only one loose objective, and that is to entertain.

To succeed, a hypergame must have loads and loads of space. The best, Cyan's *Cosmic Osmo*, takes up some five megabytes and there's an extended version, *Cosmic Osmo CD* which is currently wowing almost anybody lucky enough to get near it.

Cosmic Osmo is a small universe of four worlds which you are invited to explore. You can travel through any number of dimensions (dive into a telescope and emerge inside a new world) and can interact with the most wonderful characters such as dancing taps or a winebottle crooning mournful blues. Fans of *Alice in Wonderland* will be quite at home here.

> **"Realistic is futuristic."**
> Phil Harrison, product development manager, Mindscape.

While travelling though rooms and dimensions there are objects and inanimate creatures to click on. They will offer challenges or will simply go through routines cutesy enough to make Walt Disney sigh.



Could I interest you in a hot cup of tea?

• Today's hypergames are limited in their scope, but with mass storage advances real worlds on disk are possible.

The fun is also in experimentation. Some obvious objects do little more than burp while a diligent search may reveal something like the refreshing pumpkin-head which devours your mouse pointer in a crashing symphony of crunching and munching.

Humour is central to these first games and their novelty value escapes few explorers. The educational value of *Cosmic Osmo* has been overplayed by some but the potential with hypergames in general is great.

Let us understand that in the not so very distant future our computer systems will be capable of storing vast amounts of data. There is no reason why we can't build up libraries of the most imaginative worlds and environments. Indeed, in the UK a horror hypergame, *Psycho Killer,* is being developed which promises to be bursting with all manner of fiends and nasty tricks.

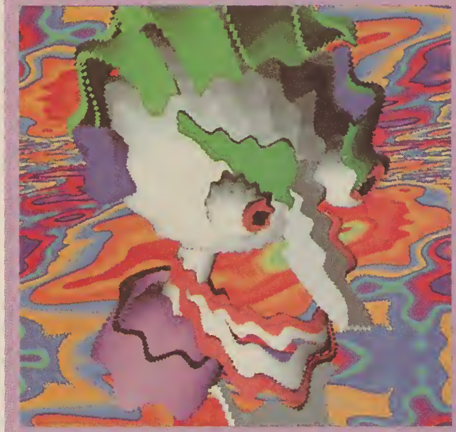
Such is the effect of works such as *Cosmic Osmo* that some of California's best writers, animators and artists are leaving the traditional industries for the new challenge of hypergames and the compact disk. Programmers are spending more time developing systems which will make such large projects a less daunting experience.

> **"In the future everything will be fact for 15 minutes."**
> Futuristic UK mag *The Cyber Times.*

This is no academic exercise. Activision is to launch *Cosmic Osmo* on to the PC early next year and anyone investing in a CD-I system would have to be extremely stuffy not to be tempted by such untainted fun.

The most intriguing aspect is that wonders like *Cosmic Osmo* are so simple. It is clear to all that they currently represent nothing more than a turn in the road and that with the aid of CD-I, colour graphics and real video, we're in for a treat.

THE INTERACTIVE COMICBOOK



Hypercomics are one step beyond the pure meanderings of hypergaming. While you are free to wander around an alternative landscape, your actions will trigger off a series of events which could lead to many solutions. The first such games will be based around standard good and evil plots borrowing from the fertile world of comic heroes.

At the moment it's all very theoretical and not a little arty. To many, the theories and procrastinations of hypercomic supporters verge on the pretentious. Phrases such as "raw essence of a new concept" flow easily from the lips of pioneers.

Even so, once you slice through the jargon it becomes clear that the imagination and talents of forward thinkers like Pepe Moreno will make for a stimulating 'new concept'.

His first project is barely a few months old. It's called *Batman Digital Justice* and is the spin off of a real comic book he launched last year.

The comic book portrayed the Joker as an extremely savage virus roaming around a Gothamised silicon environment. Batman was the electronic cure. It was all generated with computer graphics and was hailed as a success, even by some comic purists.

New York based Moreno then decided to begin work on a computerised interactive hypercomic. Like *Cosmic Osmo* you have to wander around a weird environment interacting with whomever or whatever you come across.

The difference is that your actions, whether in-line with the Batman doctrine or not, will trigger off a series of events which could lead to victory or death. Unlike most of today's games, where the objective is to arrive at one pre-determined state (be it canoodling with Princess Lovely of Gryveerios, or top of the Bundesleague) the hypercomic is designed to cater for a large number of gaming techniques.

> **"Hi-definition TVs will have built in computer chips 20-50 times more powerful than the Macintosh's 68000. Your remote controller will become more than a channel selector, it will become a mouse. You'll be able to interact with what's happening on screen."**
> Pepe Moreno, creator of *Batman Digital Justice.*

A few late '80s adventure writers attempted this technique and although it proved to be a refreshing diversion from linear gaming, it hardly turned the genre on its head.

The *Batman Digital Justice Hypercomic* is to be launched in the near future on the PC compatibles and Macintosh, with extended CD-I and CD-TV versions also promised.

Expect to see the first next year with other hypercomics and hypermovies following soon after on the various Compact Disc formats.

BIT-BOP-A-LOOPA

Bit Bopper can loosely be defined as an art system, so grandiosethat it costs thousands of pounds. It is configured to synchronise graphic and video effects with an audio source. And it can also take text in various forms.

We mention this, not because there will be vastly cut-down home computer versions soon (at about £25), but because sophisticated home computers of the future will be able to handle the full system.

The likes of *Bit Bopper* are currently being hopefully set before producers of modern television programmes with their unspeakably large post-production budgets.

But with this technology we will be able to take home movies (that technology is also coming along nicely) and integrate those with all manner of crazy graphics and animations. Add to this text and your favourite tracks and the result is something more satisfying and certainly more polished than a slide projection.

Naturally, you won't have to be versed in the subtleties of Cubism or modern art to get to grips with this technology.

TOMORROW'S WHIRL

There are two schools of thought about CD-Interactive (CD-I). One is ridiculously optimistic and goes like this:

"Within a few years virtually everyone will be using CD-I, not because it's a good computer system but because it's the most comprehensive and simple entertainment system ever."

The other, supported by various pessimists and technophobes, goes like this:

"It doesn't sound like anything I've heard of before and therefore can't be much use."

Supporters of the latter view have a bit of a problem. CD-I is quite difficult to understand until you've had a rummage. The best way to explain is to take three relatively simple applications. After that, just let your imagination roam...

1. Because CD-I is capable of full motion video it's possible to play golf on a filmed course. Your opponents will be real video players and the crowd noises are also the same as you would hear on a televised tournament.

Simply line up your shot as you would in *Leaderboard,* then watch the player take a swing. A 'camera' will follow the flight of your ball which is superimposed on the video course.

As the CD has a large storage capacity you'll be able to view any part of the course from any angle. And there's also opportunities for fun such as the appearance of maybe Nick Faldo commentating on the quality of your shot.

This is clearly far better than even the most impressive golf game doing the rounds on 386 VGA PCs.

2. Why not take a wander around the Natural History Museum? The opening screen is a representation of the museum's foyer. From here you can choose which part of the exhibition you wish to view by pointing the mouse/ remote at the appropriate door. Let's try dinasaurs.

Inside there will be pictorial options of which monsters are available. You decide on Archaeopteryx.

You can watch an animated sequence of a winged monster moving, read about what it eats, see pictures of bones, hear from talking head experts. You decide.

Then the system will offer you choices of other exhibits related to prehistoric monsters. They might even have a skeleton of an Oric somewhere.

3. The kids want something better to do than watch re-runs of *Rent-a-Ghost.* Try loading a program called *Cartoon Jukebox.*

The little horrors will be offered a number of cartoon characters which they can colour-in (using the remote) and then place in a different scenario (which can also be coloured to taste). Maybe the youngsters want a pink Yogi Bear to sing *Beautiful Sunshine* while walking in a blue and purple park. They press a button, run the whole thing, and your offspring have just created their own cartoon.

Now kick them off and re-load the golf game.

These are the simplest applications and no different from the kind of programs Philips (and Commodore) are showing prospective customers.

From a business point of view the possibilities for exploiting the bottom end of the market are enormous. This may be overly optimistic but CD-I should be more fun than satellite TV and almost as simple to use.

CD-I AND CD-TV:
SPOT THE DIFFERENCE

Technically, CD-I from Philips and CD-TV from Commodore are much of a muchness (cue, frustrated technofreaks babbling implausible jargon about concentric coherent light). Other than that, the only marked differences are:

1. CD-I is capable of full motion video while Commodore's CD-TV is not. Neither can manage the memory intensive full motion / full screen video.
2. The CD-TV will be at least £200 cheaper than the Philips machine and will arrive one full year ahead.
3. Philips is to Commodore what Lords is to Little Snoring Village Green. The former sells 10 per cent of the world's television sets and, from a marketing point of view, has far more muscle.

Also, the CD-I project is a joint venture with those other two consumer electronics mega-giants Sony and Matsushita (owner of Panasonic), so there is plenty of muscle behind the scheme.

4. CD-I has been agreed as a standard by most of the world's leading computer and entertainment companies.

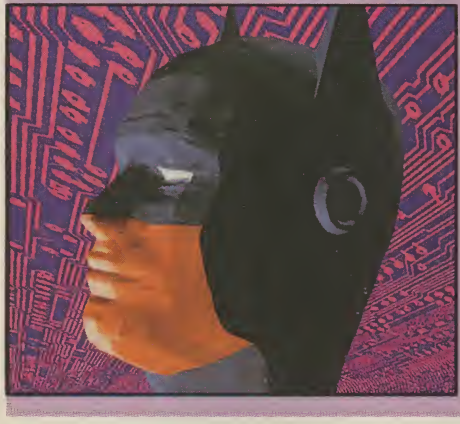
GAMES WITHOUT FRONTIERS

At present, multi-player games are something odd people with fetishes for goblins do in dark corners. To those on the outside it all looks a trifle bizarre.

Micronet (a subsidiary of British Telecom) runs the two biggest games in the UK, *Shades* and *Trash*, both of which attract about 50 players every day. It is accessed down the phone lines and play is controlled on standard home computers.

The theme is all dragons, trolls, princesses and buried treasure; things home computer owners have all but grown out of.

So what's the attraction? Simple, instead of interacting or killing computer characters, you can do likewise with real people. If you're logging on in Hartlepool it's not too difficult to slice and dismember some poor devil in Hatfield (if that's your bag).



But compared with what enthusiasts are predicting, these games are absurdly archaic. These same enthusiasts see a time when you can log into a graphical environment and do battle with foes as you would in any good two player computer game. But instead of one opponent sitting next to you, there are hundreds from hither and thither.

Take an air battle game. You would be given orders to seek out and destroy aircraft piloted by people on the other side of the country. You would have to rely, not only on your own wits and skills, but on people you don't know who happen to be on your side. The buzz would be high.

> **"Multi-user games are a bit like home computing was 10 years ago. It's in its childhood. But it's going to grow up and it will be massive."**
>
> Chris Bourne of Micronet.

Multi-play gamers consider this to be their "holy grail" (another mystical reference) and, while technically difficult, it's not impossible.

The biggest problem isn't so much in the gadgets and circuits, but in attracting corporate interest and therefore nurturing public perception.

It's very difficult for a corporation to get its head around something as obscure as a multi-player game. Especially when it is a domain which appears to be inhabited by weirdos.

The answer is to spend lots of money developing a system and then advertise it extensively until everyone understands completely the possibilities for good fun and excitement.

But not even telecommunications giants such as AT&T are prepared to take that risk. Not just yet anyway.

Micronet reckons that the giant multi-player environments beloved of sci-fi writers, complete with holographic images of human and computerised opponents, is only 30 years away.

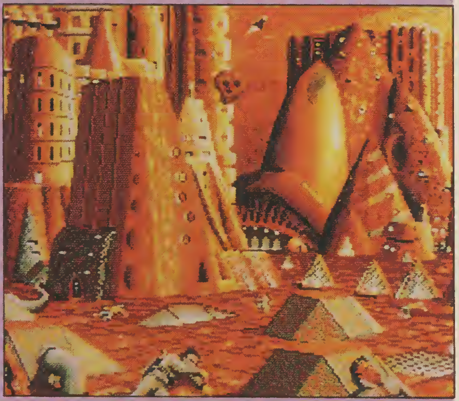
The theory is that someone (probably the Japanese) will see the potential, strike out, and change gaming for good. They would set up fantasy games, wargames and probably even sports games.

Already in the US it is possible to play a multi-user game in bars and clubs based on televised American football. Using a remote control, men with chequered shirts and baseball caps bet on what they think the outcome of a 'deadball situation' will be. Depending on their accuracy they will score yardage and, if more accurate than their drinking buddies, they'll make touchdowns and win the game.

The company involved is planning a similar project in the UK although no doubt you've finding it hard to imagine regulars getting too excited at The Rovers Return.

TECHNICAL HEADACHES FOR THE MULTI-PLAYER GAME

Designing a multi-player flight simulation is difficult since it is hard to get information down the phone lines quickly enough to keep up with the graphics.



The only solution would be for the player to send down what would amount to minimal vector co-ordinates, and for those to link up with the pictorial part of the battle. Several games, such as *Stunt Car Racer*, allow more two players to link their machines together with a cable, and others such as *Modem Wars* allow remote machines to communicate via a phone line. But widening this to many players over a modem link requires extra hardware to control several phone lines and has yet to be achieved.

It's cold comfort to know that this is very possible. It's just inordinately expensive and no investor will go near such a project. We can only wait...

MATHEMATICS OF NATURE BRING VIDEO TO THE MICRO

Once the technical people manage to get video images onto computer disks (digital video) we can really have some fun. This is a tall order given the amount of memory video takes up.

If we could achieve digital video it would be possible to manipulate any real image to our own fancies without any loss of visual quality. That might be for artistic reasons (see Bit-Bop-A-Loopa) or for traditional gaming.

Instead of computer graphics and sprites you would be playing with real characters. There is nothing new in the desire to play with real video. Various software publishers have been talking about 'software movies' for years but, although pre-runners such as *It Came From the Desert* have been fun, nothing has come close.

Unfortunately, a single video frame takes up about 500K of memory. Video runs at about 30 frames per second. Fear not, the answer could come from fractals. According to the excellent cyberpunk magazine *Mondo 2000* a new technique utilising "the mathematics of nature" (fractals) can compress an image by five hundred times.

Scientists at Georgia Tech have developed a way to run 40 seconds of video on a 1.2Mb floppy. The best of it is that decompression time is 30 frames per second – so everything runs perfectly.

The massive Intel corporation has been working on its own system. Digital Video Interactive (DVI) compresses video by over one hundred times to enable 72 minutes of full screen full motion video to be stored on a Compact Disc. It can be accessed interactively under computer control. Already the likes of IBM and Olivetti are working on applications which will use the video capabilities.

With software developers acting more like Cecil B every day we could even see TV stars appearing in top games.

EINSTEIN'S CONTRIBUTION

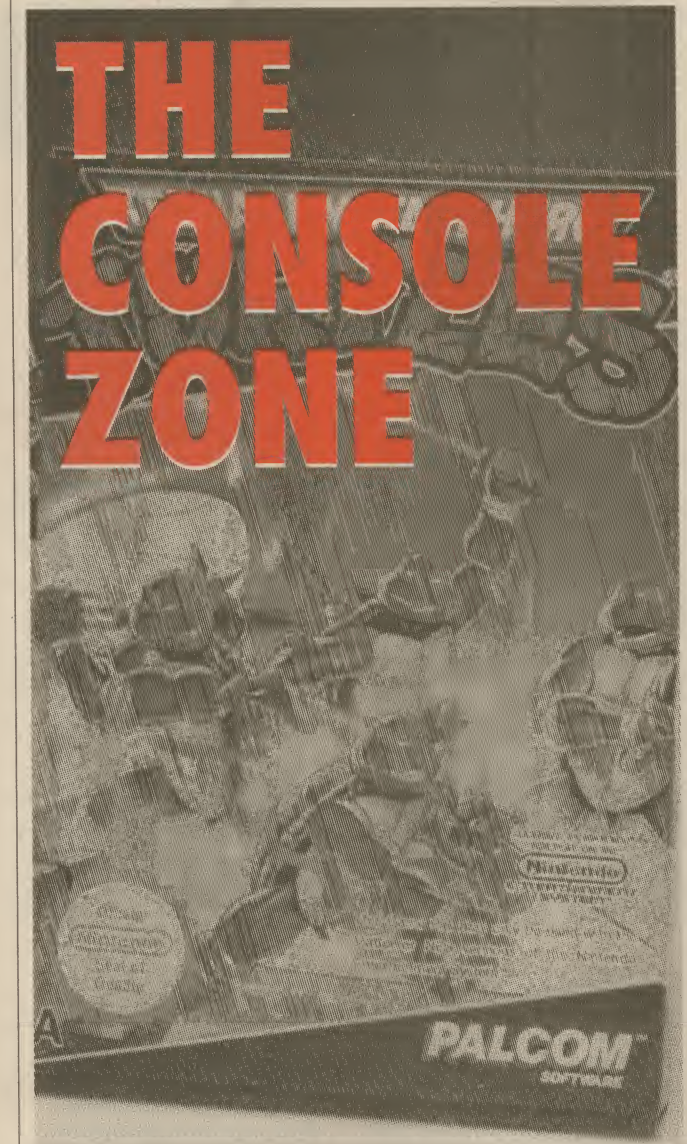
If you were to photograph a tennis ball travelling at 185,000 miles per second (just under the speed of light) it would look something like a yellow sausage imploding on itself. We know this because Einstein said as much in 1905. For obvious reasons, it has always been difficult to prove.

However, recent developments in the US mean that computers can simulate what any object would look like while travelling at 99 per cent of light speed.

The effect is described quaintly as relativistic effects in space-time.

The theory is that these extraordinary images can be incorporated into video games. This would be the perfect opportunity to explore how objects react while travelling at the speed of light.

And it would make the new generation of computer game visuals quite unlike anything you (or Einstein) have seen before.



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CONTENTS

AMIGA 22
The latest sound sample manipulator revealed

ARCHIMEDES 23
Shoot-'em-ups on test

CPC 24
The first console games reviewed

C64 26
Lords of Chaos: is it any good?

PC 27
System files explained

Spectrum 28
Pokes galore

ST 29
Troops out for the lads

Centrefold 38
Impossible to sum up in a line!

The Console Zone 48
Games addicts start here

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The weekly bulletin board and user group guide

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KEYBOARD CAPERS

Checkmate Digital, the London-based company that brought you the A1500 conversion kit for the A500, has announced the shipment of several new additions to further enhance an already impressive product.

First up is a new keyboard conversion kit that allows those users who cannot afford the full price of the A1500 kit, to add an external keyboard to their existing A500 casing. The keyboard conversion kit takes the existing A500 keyboard mechanism out of the A500 case and plonks it inside the same casing used with the A1500. 'What about the gert hole?', I hear you shout. Well, Checkmate has solved this one by also including an extra blanking plate that fills the gap left by the keyboard. Mounted into the plate is a five-way DIN socket that connects the now external keyboard (via the included curly-cable) to the A500 motherboard.

Checkmate is selling the kit for a mere £63.25. Even better, if you then decide that you'd like to upgrade your Amiga to the full A1500 spec, Checkmate will let you have all the extra bits and pieces required for a guaranteed 20 per cent off the normal retail price of the A1500. Sounds like a good deal to me.

Also new from Checkmate is the A590 kit, that allows owners of Commodore's A590 hard drive for the A500 to mount their drives internally within the A1500. Although the kit is designed specifically for the A590, Steve Jones of Checkmate claims that it should also be suitable for most other 3 5-inch hard drives. If you're planning to use some strange make of hard drive that even Commodore hasn't heard of, give Checkmate a bell before handing out the readies. Checkmate will sell you this little wonder for £69.

For users that wish to mount two floppy drives as well as a hard drive inside their A1500, Checkmate is working on an adapter that will allow you to do just that. According to the company this should be available by the end of the year.

Checkmate is also working on several enhancements to the existing A1500 system that will be made available to existing A1500 owners for a minimal fee. The first thing to get the upgrade treatment will be the A1500 keyboard. Working on suggestions made by existing users, Checkmate plans to add swivel feet to the bottom of the keyboard and to add precise mounting brackets inside the keyboard case to hold the keyboard mechanism in a more stable fashion. Currently the A1500 uses simple adhesive pads.

Checkmate also plans to move the A500 power and disk drive LEDs out of the keyboard case and into the main system unit. For more, give Checkmate a bell on: 071-923 0658 – tell them *Express* sent you.

THREE IN ONE SAMPLING

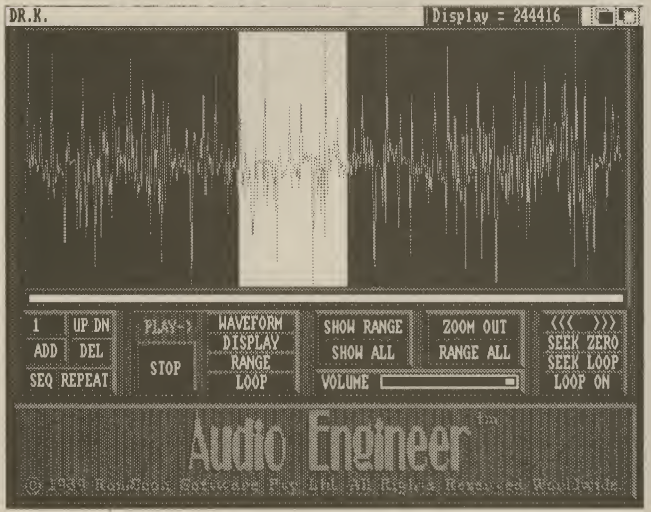
Anyone remember Aegis' *AudioMaster II* sampling software? No? Well, I'm not at all surprised. For a program that received such widespread approval, it failed to receive the attention it deserved in this country.

Those of you who have been lucky enough to have used it will no doubt agree that there's simply nothing to touch it. Even MicroDeal's *Master Sound*, which sold like hot cakes when it was released earlier this year, cannot even hope to compare with the power that *AudioMaster* provides.

We were all saddened to hear of the recent demise of the Aegis Corporation, the company responsible for *AudioMaster*.

Before Aegis hit financial trouble, the company promised Amiga users that a major revision to the *Audio Master* system was just around the corner. Although *AudioMaster III* is now well and truly dead, the upgrade has been re-incarnated in the form of *Audio Engineer version 1*.

Engineer is now being sold by an Australian company called RAMSoft. Unlike *AudioMaster*, RAMSoft has decided to make *Engineer* available as both a software-only pack (for use with other samplers) and as a complete system, complete with an all-new sampling device produced by an equally



• **AudioMaster III** *is now well and truly dead, but has been re-incarnated in the form of* **Audio Engineer** *version 1.*

unknown Australian company G-Soft.

The Audio Engineer sampler is phenomenal – easily the best sampler yet seen on the Amiga. Sampling from a CD source, G-Soft's sampler produced some of the cleanest samples I've ever heard from an Amiga. Anyway, look out for next week's *Express*, in which I shall be bringing you a full review of this amazing package.

SOUNDS SILLY

Strange what some people use the Amiga for. RAMSoft have discovered some rather interesting activities that users have found for their product.

Record restoration. Using an Amiga equipped with 4-8Mb of RAM, old LP tracks and 78s can be digitised into the Amiga, and have their scratches removed using *Audio Engineer's* freehand edit function. The resulting sample is then re-recorded on to audio tape.

Answering machine messages. Because answering machine messages are required to be no more than 20 seconds long, users can shrink the sample down by editing out small portions from each word. To do this with conventional tape would be a monumental task of splicing.

Police Records. Not of the *Walking on the Moon* variety, but of the criminal kind. An Australian police department is using *Audio Engineer* to create voice-files of criminals. This information is then stored in *SuperBase* along with a digitised picture of the suspect. Robocop eat your heart out!

FLICKER-FREE 500

MicroWay Europe is soon to release an A500 version of its successful Flicker Fixer card.

For those of us not lucky enough to have scrounged an Enhanced Chip Set out of those nice people at Commodore, the A500 Flicker Fixer provides flicker-free high resolution displays when used in conjunction with a multi-sync monitor. Even if you decide to upgrade your A500 when the ECS is eventually released, MicroWay claims that it will still be possible to use its board in conjunction with the new chip set.

Although MicroWay has been talking about the possibility of producing an A500 Flicker Fixer for a long time now, the company has preferred to keep mum about specific details.

Jason Holborn

Archimedes

THE NAME OF THE GAME

After the last two weeks of fairly 'heavy' news I'm going to start this week with a little light entertainment and give you a round up of what's been happening in the wonderful world of games.

The 4th Dimension has finally got round to releasing the Archimedes version of its sideways scrolling *R-Type* clone, *Nevryon*. I haven't managed to see a copy yet, but if it's anything vaguely like as good as the version was for the BBC then I think we're in for a good thing, more news next week. It should certainly stand at least shoulders, if not heads as well, above *Deeva*, a similar offering from Caldergien. It's always good to see new companies venturing into a market as tricky as Archimedes games, but I really think they need to come up with something with rather more 'oomph' to stand any chance of impressing people. As you can probably guess, I was rather disappointed with *Deeva*. Out of 10 then, Scrolling: 9, Rest of Game: 0. Admittedly there are some occasionally pretty background graphics, but these are used over and over and over again and are completely spoilt by the foreground graphics, such as your ship not being plotted with masks, giving the impression of flying about in a little black box!

On the subject of games not being up to scratch, I was most disappointed to see *Hostages*, one of the two latest releases from Superior Software. It seemed to have had a fair bit of hype and I certainly expected something pretty impressive from the Gary Partis stable. Unfortunately, too much disk access, uninteresting sub-games and unresponsive controls detract drastically from a potentially reasonable game.

On a more positive note, *Superior Golf* is a much more classy product. It includes many of the features that are now expected in a golf simulator such as different courses, different terrains, wind, hook and slice and hole maps. It also includes the now obligatory course designer. Overall I'd rate it on par (*sic*) with *Holed Out* from 4th Dimension which has been around for quite a while now. However, I don't think it really dramatically improves on it – except in price, *Holed Out* sells for 20 notes, same as *Superior Golf*, but you need to shell out another 20 for the designer. But the real point is, do we actually need another golf game?

Other games to watch out for at the moment are *Blowpipe* and *Worldscape* from Eclipse. I have no details on these at present, but you may have seen Q.D. Enterprises demonstrating them at the *BBC Acorn User* show. I remember seeing a very early demo version of *Blowpipe* a couple of months ago. It's another *R-Type* game but with some very pretty snazzy looking backgrounds.

Finally in this little gaming section I'd like to report a small bug, and more importantly a small bug fix, in Empire's *PipeMania*.

A number of people have pointed out that the game always defaults to mouse or joystick control when a password is entered, making it impossible to play the game with keys. To get round this, hold down the space bar when you press [Return], after typing in the password. Simple eh!

TRIVIA CORNER

To round off this week's column, I'd like to present a small item of trivia to amaze your friends with at parties. Recently I was writing a program ➤

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that needed to detect key presses and simply return a number, according to what key was pressed.

I wanted to able to tell if the various control keys such as [Shift], [Ctrl], [CapsLock], etc. were being pressed, so using GET was out. I also couldn't use INKEY because I'd have to check for each key individually so I resorted to using event-11, which is generated by the operating system whenever a key is pressed.

This is dead handy, as the event routine is called telling you which key has been detected and also whether it was pressed or released. Even more convenient is that the keys are numbered sequentially from the top left hand corner of the keyboard to the bottom right. Thus [escape] is key 0 and [enter] is 103.

The thing is, there are only 103 keys on the keyboard! It turns out that the left [shift] key returns a value of 76 and Z returns 78, so there is actually a missing key between the two, I wonder what it is.

Another amazing fact in next week's column...

SCREEN GRABBING FOR PROFESSIONALS

Following my inclusion of a 'free' screen grab program in *Express* 95, I have now had hands-on experience of perhaps the ultimate in screen grabbers, *Snippet* from 4Mation Educational Resources. Yes, the same company that came up with *Poster* and *Jigsaw*.

This is not merely a screen grabber, but a more a complete desktop sprite-editor along the lines of Acorn's own *!Paint*.

On this front, the program features all the drawing, painting and editing features found in *!Paint*, with a few rather useful additions like anti-aliased text plotting and a very fast mode converter – much easier than, but not as versatile as, using *!ChangeFSI*.

There is also the facility for saving sprites, either singularly or grouped together in a compressed file. This does a very impressive job of disk space saving.

The cunning bit of *Snippet* is that, on pressing both [Alt] keys the machine is completely frozen and an outline box appears on the screen. This can be moved around with the mouse and a couple of key strokes saves the area within the box to a file.

This works from the desktop, from BASIC under *!65Host* (the BBC emulator), even from within protected games. Pressing escape returns control to the frozen activity as if nothing ever happened. The saved sprite can then be loaded back into *Snippet* for editing or printing as desired.

All very impressive and well worth the asking price of 30-odd quid.

Ken Coumarin

PC

MORE CONSOLE ACTION

Burnin' Rubber may have been the first ever Amstrad console game, but since it is bundled free with the machines anyway, it's not really the first commercial release. No, that accolade belongs to Titus's *Fire & Forget II* – the first ever Amstrad console release!

This game has already been previewed in this column, but for those who don't know, here's a brief resumé...

You're in control of a car... no, it's a plane... no, it's... Well, whatever it is, it can travel either on the ground or in the air. Your Thunder Master II (yup, that's what it is) is bristling with some fairly fancy weaponry too – like an ionic blaster, fired simply by pressing one of the joypad's fire buttons, or missiles, released by pressing both buttons simultaneously. The ionic blaster is handy for taking out those run-of-the-mill, everyday nasties, while the missiles simply home in on the biggest thing they can find.

If all this firepower sounds a bit over the top, well, you're going to need it. You see you're up against a convoy of ruthless terrorists en-route to Megapolis and the third international conference for peace. Peace is the last thing on their minds, though, as they're bringing a nuclear bomb to the party...

There are literally dozens of enemies to battle against. Some are easy meat for your blaster, some need a missile to see them off. And while some can be knocked out while you're driving along the road, others need to be taken on in the air.

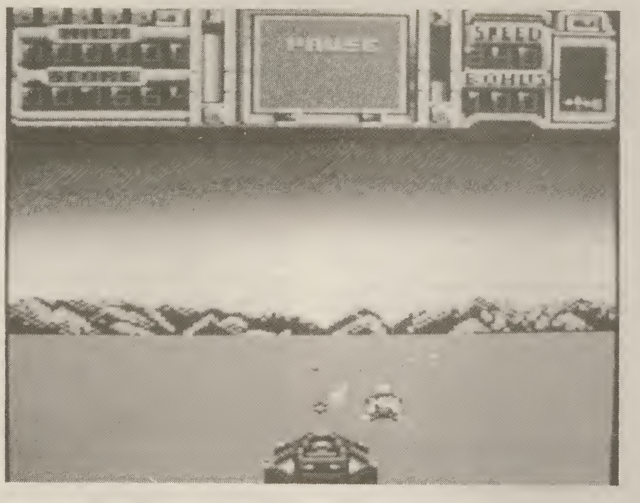
As you drive/fly along, there's extra fuel and missiles to be picked up from the road. Make sure you dodge the mines at the same time though.

Keep this up for long enough and you make it to the extra tough end-of-level guardian. Get past this monster and you're on to the next stage – and one step closer to saving the world from nuclear oblivion.

But the question is, how does the first ever stand-alone console release play? The bad news is that the formula is not startlingly original, even if it's still a good, solid blast. The good news is that the new hardware chucks those sprites around at a terrific rate, one that would do justice to any arcade conversion. The graphics are just as fast and just as smooth as *Burnin' Rubber's*, and the extra colours available have allowed Titus to draw in a superbly graduated sky, changing from the palest of tones at the horizon to a deep blue overhead. Overlook the slighly lower on-screen resolution and you really could be looking at a 16-bit game.

It's going to take a while before programmers really show us what they can do with the new hardware, but if *Burnin' Rubber*, and now *Fire & Forget II*, are anything to go by, we're in for some pretty stunning software.

The only problem is going to be price. You see *F&F II* is a massive £29.95, which is twice as much as you would pay for CPC software on disk. How many people can afford to spend



• Fire and Forget II: *the extra colours available have allowed Titus to draw in a superbly graduated sky, changing from the palest of tones at the horizon to a deep blue overhead.*

that much money? Is there a market for games at that price? Well, however you look at it, if Sega and Nintendo can do it with their consoles, why should Amstrad be any different?

THE ULTIMATE BASIC?

There have been quite a few 'turbocharged' BASICs for the CPC in the past. One of the great things about the standard Locomotive BASIC is that you can stick on extra commands of your own devising, and Michael Scott is just one person to do that, coming up with his own version of the language – UltraBASIC.

UltraBASIC features about 50 extra commands. While it will work, after a fashion, on the 464 and 664, it's really designed for the 6128 and its extra memory.

50 additional commands sound a lot, but in practice some are more useful than others. Typing `|SILLY.SAYINGS`, for example, calls up a daft proverb or saying once a minute. Jolly enough for a time, but ultimately a little wearing. By contrast, there are also some very useful commands which do things like switch the cassette motor on and off and allow you to examine file headers.

Most interesting of all, however, has to be the other programs thrown in. *Bar Tetris* is a brilliant pop-up version of the Russian puzzler, which lets you switch between boring BASIC coding and a bit of light relief, while a *Silicon Disk* utility lets you use the CPC's RAM as a temporary disk drive. In addition you get a Mandlebrot set generator, a disk-to-tape archiver and many other goodies.

All this is pretty darned good value when you consider the asking price is a measly £6. If you want to find out more, write to: Michael Scott, 83 Patrick Allan – Fraser Street, Arbroath, Angus, Scotland DD11 2LX.

BLOW ME!

Peripherals manufacturer Microstyle has come up with a gadget that could prove a godsend to ROM chip programmers.

The RAMROM is a RAM module that behaves exactly like a ROM chip – even to the extent that its contents even survive a reset. If the computer is switched off, the data is lost, but in all other respects the RAMROM might just as well be ROM.

The beauty of the device is, however, that you don't even need a ROM board to accomodate it. Instead, it simply connects directly to the CPC's expansion-port. Total memory is 32K, allowing the storage of two ROM programs at any one time, and all in a box measuring 3.75 x 3 inches. A through-connector means that the RAMROM can be used in conjunction with any other peripherals.

The wonderful thing about all this is that ROM chip programmers can now develop and test their software without having continually to blow and erase chips.

It's also an excellent way to dabble in ROM programming without having to shell out the loot for a proper EPROM programmer.

Best news of all, though, has to be the price – only £13.95, and that's including VAT and carriage. If you're interested, contact Microstyle at 212 Dudley Hill Road, Bradford, West Yorkshire BD2 3DF, or telephone 0274 636652.

POWERDRIFT POKE!

There's just space for this really excellent poke for the tape version of *Power Drift*. It comes from Garret Flynn of Co. Donegal, and gives you a huge 255 credits.

```
1 'Powerdrift Cheat - 255 Credits
2 'By Garret Flynn
3 'Multiface Addr = 2AA1 Poke = FF
4 'Tape method 1
5 '
10 DATA 21,16,bd,36,c3,23,36,0e
20 DATA 23,36,be,c3,98,9a,21,17
30 DATA be,22,4f,a6,c3,08,a6,dd
40 DATA 21,b9,a8,11,ab,00,cd,48
50 DATA a8,21,2a,be,22,62,a9,c3
60 DATA e3,a8,3e,ff,32,a1,2e,c3
70 DATA 00,44
80 MEMORY &5000
90 FOR addr=&BE00 TO &BE31
100 READ a$:n=VAL ("&"+a$)
110 POKE addr,n:chk=chk+n:NEXT
120 IF chk<>&157F THEN 150
130 LOAD"pd
140 CALL &BE00
150 PRINT"Mistake in data!!!!
```

Thanks to Garret for that one, and keep sending them in.

Rod Lawton

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64

GALLOPING GOLLOP

Julian Gollop is a name which will prod the memory of many a C64 owner, having authored what are often considered miniatures wargames for the Commodore 64 and its 8-bit cousins. More recently, Bladesoft has been seen taking its latest success, *Laser Squad*, the way of the 16 bitters, causing numbers of those users to pause and remember his earliest efforts (*Rebelstar Raiders* ring a bell?). Now a man like Gollop never forgets his roots, it seems, and he's proved it by excelling himself with Bladesoft's latest 64 offering, *Lords of Chaos*. It's a fantasy bash this time, leave the moonbases out, JG, and in his inimitable style, it's a four player game to boot.

It could be said by the cruelest among us that Julian has only ever written one game, but has released various substantially embellished versions of it over the years. But perhaps it isn't so unusual that he's done this. It's the basis on which many of his conventional wargaming and roleplaying design contemporaries work. However, if *Laser Squad* was a *Rebelstar* with rivets, the same cannot be said for *Lords of Chaos* (and no, I haven't forgotten the original *Chaos*).

In *Chaos*, up to four players can take a wizard they've previously designed from within the program or had designed for them by its random setup routine, and vie with human and/or computer controlled adversaries to take control of five multi-screen worlds, each more complex than the last. Each wizard can call upon a wide variety of spells to help him achieve his goal. Most of these are of the creature-summoning type. Creatures are not only additional weapons to be wielded by the wizard who summoned them, they're also versatile tools to be used in whatever situation the player's imagination dictates. Flying creatures can overcome the limitations of spotting an enemy who would be otherwise obscured by Gollop's ubiquitous line-of-sight rules as they soar high above the terrain.

Budding Gandalfs may command a mount, such as a unicorn, and quickly traverse the scene of battle. Even the apparently useless pixie defies the enemy eye with its trait of invisibility, conjuring quite a few possibilities for the most narrow minded thaumaturgists.

Let the battle commence then and cast ye your Tangle-Foot and Flood spells to channel the enemy through the worst killing ground you can find. Beat them to a pulp with a corps of giants and trolls whose effectiveness is by no means hampered by the fact that they're only marginally more intelligent than the surrounding vegetation.

The great thing about the Gollop games is that they're the basis of satisfying and long lasting entertainment for people who prefer to play other people rather than just outwit the chip inside their micro.

Having said that, *Laser Squad* veterans who take on computer controlled wizards will find themselves conquerors of all they survey before they can say vermithrax pejorative.

The word from Bladesoft is that expansion sets to *Lords Of Chaos* will follow and players will be able to take their (more experienced and powerful) wizards onto new challenges. A fantasy world-design kit wouldn't go amiss either. Whether they'll appear though is another matter. We all know how many good 64 games there are and successfully exploiting a niche within a niche within a niche is going to call for some powerful magic indeed.

CONSOLE CONCERN

Software houses are sitting on the fence in the light of Commodore's decision to make cartridge software the basis for further C64 and (of course) C64GS development. In fact, Entertainment International's Simon Jeffrey said: "Everybody wants to do it but they all seem to be waiting for everybody else to jump in first. It's a tricky market." When I called, E.I. was exploring the possibility of a beefed up *Dick Tracy* for the new console. Richard Hennerley of Palace was even more pragmatic: "We're considering it (console software) but we're looking at the prices. We'll probably sit on the fence for a while and see how the console itself sells. The market is very uncertain at the moment."

The most positive response of any of the companies prepared to talk at all about their plans for the new machine came from Phil Harrison, who said of Mindscape's approach: "We're very excited by the prospect (of cartridge software). Last year's Light Fantastic pack proved that it is still a big market," he added, obviously referring to 64 backing in general.

• *The GS: "It should do extremely well."*

Nevertheless, when asked about the C64GS in particular, he said, "It should do extremely well." We'll keep our fingers crossed.

A QUICK REMINDER

That you'll be able to grab a copy of *Commodore Format* from September 13, when it appears at the Olympia CES. 100 pages, plenty of colour, three full games on the cover (and two playable demos), loads of tips, comms and, of course, superlative reviews for a mere £1.95.

That's it, plug over. I'll keep quiet if you buy it.

Sean Masterson

PC

FINDING THE RIGHT WORD

Software for the PC tends to be rather dull. Not for us the hip-hop multicoloured scrolling demo with sampled 60s TV series soundtrack. PC programs tend to be utilitarian in the extreme. An example of just that is this week's featured program *Word for Word.*

If you never have any need to translate word processor documents from one format to another, then skip to the next section now, because that's all *Word for Word* does.

Given a file written by one word processor, *Word for Word* converts it into another's style without losing any information on the way. It even transfers headers, footers and rules without any problems. *Word for Word* seems to work fine. I say seems, as by my reckoning there are 2,162 possible combinations and I haven't quite got around to testing them all yet – maybe next week.

The software supports a lot of word processors, some of them deeply obscure, but the list has an American feel to it; you won't find *LocoScript PC* here.

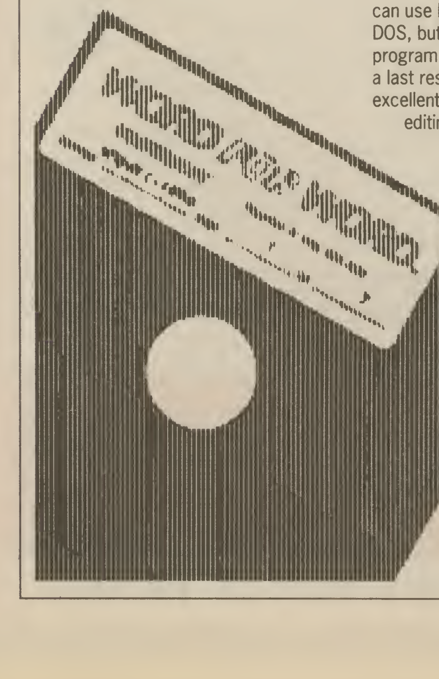
So who will find it useful? Well, if you need this program to change files within your office, take the system manager out and string them up by their floppies. Most of the big- name word processors will happily read files from the other common formats anyway.

This software will be of most use to someone co-ordinating text files sent in by people working in other offices or at home, and this is where the list of formats it supports begins to look a bit thin. Future's office may not be typical, but many of our writers don't use PCs to produce their work, they use PCWs, Atari STs, Amigas or Archimedes. Even those who do have PCs often only bought them for word processor compatiblity with the office. How much more useful then if *Word for Word* could read the common word processors formats from the home machines – *LocoScript, Protext, First Word Plus, KindWords*, and so on.

One useful feature of the program however, is the ability to produce files which retain all the formatting information but consist only of text – no control codes. These files can easily be sent over a modem link as text files, not using any special binary protocols. If the person at the other end of the phone has *Word for Word* then they can convert the file back into any of the word processor formats.

All in all then you might find *Word for Word* useful if you have *Advancewrite Plus* or *Peachtext 5000*, but for most of us a bit more organisation around the office should make it unnecessary. I look forward to seeing an expanded version which looks beyond the PC.

Word for Word costs £99.99 from Mindscape on 0444 86545.



CONFIG.SYS AND AUTOEXEC.BAT

Those two files strike horror into the hearts of PC owners everywhere. They are text files containing lists of commands which the PC carries out immediately it is started up. The files also contain information the PC needs to know about what hardware is attached to it. Getting these files set up properly is the key to having a machine which operates properly, and it is worth spending some time getting it clear in your mind how they work and what they do.

Over the next few weeks I'll be taking a look at the various ways you can set up these files to make your machine run smoothly. There is no way I can be comprehensive about this – some of the commands in these files are specific to your brand of PC and your particular hardware setup – but I can give some guidelines.

Before you can fiddle with the contents of these files you need to have a text editor. A word processor which can save ASCII files (sometimes known as 'text only', 'DOS text' or 'non-document' files) is ideal. At a pinch you can use EDLIN, which comes with MS-DOS, but this is a hideously unfriendly program and should only be tackled as a last resort. DR-DOS owners have the excellent *Editor*, which is perfect for editing `CONFIG.SYS` and `AUTOEXEC.BAT`.

It's important that the files are ASCII, as a *WordStar* document file, for example, simply won't work.

Let's start by looking at the `AUTOEXEC.BAT` file. This is a batch file which consists of a list of commands which are executed when you switch the machine on. These commands are ordinary DOS ➤

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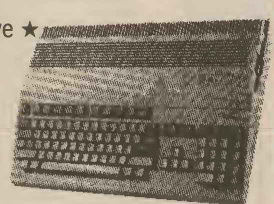

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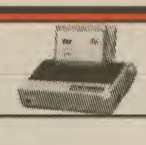

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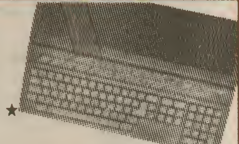

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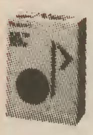

Techno-fear takes some strange forms, none stranger than the fear of asking a shop assistant what connecting cables are needed and how to hook them up. This starter package puts paid to that one. Inside the box is everything you need to make music on your computer:

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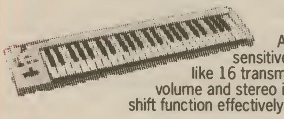

A compact 49-note keyboard to suit your computer music setup. Touch-sensitive keys, pitchbend/modulation (vibrato) lever and MIDI control features like 16 transmit channels, 128 program changes and a date entry slider for adjusting volume and stereo imaging. And if you need a few more keys to complete your latest hit, a shift function effectively turns the PC-200 into a six octave keyboard. **Price: £175 rrp.**

Roland DESK TOP MUSIC SYSTEM

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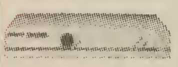

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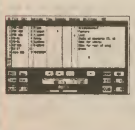

Tiger Cub turns your computer into a recording studio, complete with 12-channel mixing desk, effects routing and editing suite. Simple and logical screens and menus make it easy to use for the complete beginner; powerful control features make it ideal for the professional. Copyist Apprentice lets you print out and edit your music - even down to altering individual drumbeats - and alternative icon screens mean you don't even have to read music. 4 port midi interface. RRP £29.95. Price £178 rrp

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commands or the names of programs, exactly the same as you would type at the C> prompt. This is the place to put commands you wish to issue every single time you use the machine. For instance, `AUTOEXEC.BAT` should contain a PATH command specifying the directories to be searched, as explained last week.

Another useful command to put in `AUTOEXEC.BAT` is the PROMPT command. This can customise the C> prompt to read whatever you like. While this might not sound especially useful, one of the options is to have it display the name of the directory you are currently in. This stops you from getting lost in the directory structure of your disk. To get this prompt include this line in your `AUTOEXEC.BAT` file:

```
PROMPT $p$g
```

The $p specifies that the current directory is to be displayed, while $g is simply the way to include the '>', which otherwise has a special meaning if you type it after a command.

Childish tricks with the PROMPT command No 1. Set the prompt as follows:

```
PROMPT C$gformat c:
```

and watch your enemies trying to delete the fatal-looking command.

More on `AUTOEXEC.BAT` next week.

QUICK TIP

If you need a word-count in Microsoft *Write*, save the file and a character count will appear in the window bar at the bottom left. If it flies by too fast to read, hit [Alt]-F S then immediately hit another [Alt] key combination; that will freeze the figure. Dividing the character count by six will give you a pretty good word count.

QUICK MOAN

Domark's free-form database *MemoryMate* has just landed on my desk. I have only just installed it so I'll reserve judgement on the program itself until next week, but the install program is so dreadful it deserves a mention now.

When you run the install program (called INSTALLM for some reason) it first off asks you if you want to install to another floppy. I answered no, as I wanted it on the hard disk. It then asks you for the name of the directory you want to use for the program. I told it. It then installed itself in that directory on its own floppy disk, quickly running out of disk space of course!

Trying it again using the full path name of the directory cured the problem, but why can't these people – and by that I mean all software manufacturers, not just Domark – get their act together and produce a nice easy-to-use self-expanatory installation program?

If you have any horror stories of nightmare installation procedures, why not drop me a line at the usual address; a small prize awaits the best tale of woe.

Stuart Anderton

Spectrum

ANYONE FOR GOLF?

Golf, that good walk you spoil whilst wearing crap clothes, is an eternally popular theme for Speccy games. The latest golfy offering to hit the shelves is Codemasters' *Pro Golf Simulator* and it's not at all bad. If you like golf. Rather than the impressive behind-golfer view inspired by *Leaderboard* this one goes for a more functional overhead perspective to depict the lakes, trees, bunkers and rough of the course.

After you've selected the appropriate club it's a matter of pressing Fire, releasing it when you think the strength meter is right and then doing the same to get the required amount of spin before you actually hit the ball. There are a full 18 holes to get round, and when you get bored of them the built-in course designer means you can create loads more. Strangely addictive, and if you like playing golf on your Spectrum and have already got *Leaderboard*, Codemasters' *Pro Golf Simulator* is well worth spending £2.99 on.

ENIGMATIC

The latest issue of *Enigma*, the mag on tape for Speccy and SAM owners has just hit the streets so here's its almost customary plug. This latest issue (number eight) includes the second very good part of *Dr Jekyll and Mr Hyde*, a classic gothic adventure, some sumptuous *Defenders of the Earth* screen shots for SAM owners and lots of well written games reviews. That's as well as a good tips section, features on licensed games, a huge adventure section and various special effects to bind everything together. *Enigma* costs £1.99 on tape for 48,128,Plus-2,Plus-3 and Coupé owners from: ESD, 15 Westfield Road, Inverurie, Aberdeenshire AB5 9YR.

RUPERT WHO?

I've just read a brilliant anecdote (in the plus-3UG's *Contact* magazine) about Alan Sugar that might go some way to explaining why the Speccy was recently passed over in favour of the CPC for redesign and jazzing up. Media mogul, owner of News International, billonaire etc, etc, Rupert Murdoch went to visit our Alan recently. When he arrived Alan Sugar's secretary buzzed through and told Alan who was waiting to see him. Mr Sugar said "Never heard of him. Tell him to piss off." Eventually it was explaned to His -Sugarness just exactly who Mr Murdoch was, leaving Al to blurt, "Oh my God! Quick, get him back!" I think that says a lot really.

CES

Here's a date for your diary (and a cliché to add to your collection). The Computer Entertainment Show, the successor to the now defunct PC Show, kicks off on September 13 at Earls Court in London. All the big names will be there, along with the notorious hamburgers, screaming children and several Scandinavian forest loads of paper- based hype. Amstrad will doubtless be too busy pushing its CPC consoles to worry too much about the Spectrum, but there's always the Future Publishing stand for you to visit and, apparently, Saturday morning kid's show *Motormouth* will be broadcasting live from the show. Contain your enthusiasm for the biggest event of the computer year.

PLUS 3 USERS

I thought you'd probably need reminding about the special offer open to you and only you my fellow Spec chums. If you want to feel the benefits of belonging to the very worthy Plus 3 Users' Group for £1.50 less than everyone else you've only got about another week to take up the incredibly generous chairman, Daniel Garner, on his super-dooper bargain away-day saver offer! Join The Plus 3UG for a year by sending £9.50, rather than the usual £11, to 57 Lovers Walk, Dunstable, Beds LU5 4BG. Membership includes a monthly copy of *Contact*, the group magazine, access to postal/telephone/bulletin-board helplines, various special offers and a hefty discount on the club's huge and impressive public domain library.

MORE MIKTOR

After occupying the column for three weeks with his excellent *Ghost* program, that all round good bloke Miktor has just weighed in with some of those pokes he's so good at coming up with. To use them, simply type out the listing, save it for future use and, providing I haven't made the traditional typing error, you can then run the routine and play your game tape from the start. Our thanks once again go to Miktor.

```
10 REM SPAGHETTI WESTERN 48K
20 CLEAR 63E3: LOAD ""CODE: POKE
64013,33
30 FOR N=64016 TO 9E9: READ A: IF
A<256 THEN POKE N,A: NEXT N
40 LOAD ""SCREEN$ : RANDOMIZE USR
64000
50 DATA 175,50,160,128: REM RETRY
60 DATA 175,50,59,142:IMMUNE TO
FLYING THINGS
70 DATA 175,50,161,129: REM AMMO
80 DATA 233,999: REM END MARKER

10 REM T-BIRD
20 PAPER 0: BORDER 0: CLS : LOAD
""CODE 16384
30 POKE 16400,33: FOR N=16403 TO
9E9: READ A: IF A<256 THEN POKE
N,A:NEXT N
40 RANDOMIZE USR 16384
50 DATA 175,50,33,151: REM MISSILES
60 DATA 62,183,50,160,151: REM LIVES
70 DATA 233,999: REM END MARKER
```

What kind of Spectrum or SAM related things would you like to see covered in this column? Tell me by writing to: Robin Alway, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW.

Robin Alway

ST

THE GREATEST SHOW ON EARTH

Question: What's large, sweaty and German? Answer: No, not Chancellor Kohl, but the biggest Atari show in the world, Dusseldorf '90. This extremely well attended show has traditionally been the platform on which a whole plethora of products are launched and this year's event was no exception.

Atari's new baby, the TT was much in evidence in its 32MHz configuration and boasting a shiny new TOS 3.01. It was rumoured that this will filter down to the ST one day, we can but hope! Other tasty looking hardware included a 12-bit sampler which can record straight to disk at up to 44KHz and an amazing accelerator board which improves speed by up to 360 per cent.

MUSIC: OPUS 1

We all know that the ST is the only choice if you want to create electronic music. New ST MIDI products is released almost as often as Kylie Minogue singles, and this week sees a number of new packages which look sure to make an impression.

MCMXCIX is a company which specialises in music equipment. It's just announced that it'll be distributing a package called *Passport Encore*. This curiously named program is a DTP notation package for the ST which enables you to produce extremely professional- looking musical print outs. The software can handle all musical conventions as well as up to 64 staves with four voices on each stave. *Encore* will cost you £429, or with *Master Tracks Pro* for £714. The same company has also announced the release of a budget 64-track sequencer which goes by the name of *Trax*. The program is operated by means of graphic entry, which is an easy way of entering music. *Trax* costs £85 from MCMXCIX on 081-963 0663.

MUSIC: OPUS 2

So you're into music, you've got an ST and you really wanted to go to the British Music fair. However you couldn't because it was in London and you live somewhere north of Watford gap, right? Fear not, the BMF is moving north just for you, to G-Mex in Manchester.

Most of the major exhibitors who attended in London will be at the northern show. These include Sound Technology, producer of the excellent *C-Lab* and the amazing *Sound Tools* hard disk recording equipment, as well as Yamaha, Casio, Akai and some of the other (ahem) big boys. The G-Mex music fair will be held from October 5 – 7 in the Windsor hall.

The doors open at 10 o'clock and entrance is £3 for adults and £2 for all you skint under- 14s.

MUSIC: OPUS 3

If you've been having problems communicating with that expensive synth which is at the other end of your ST, then it might be your cables which are causing the hassle. ➤

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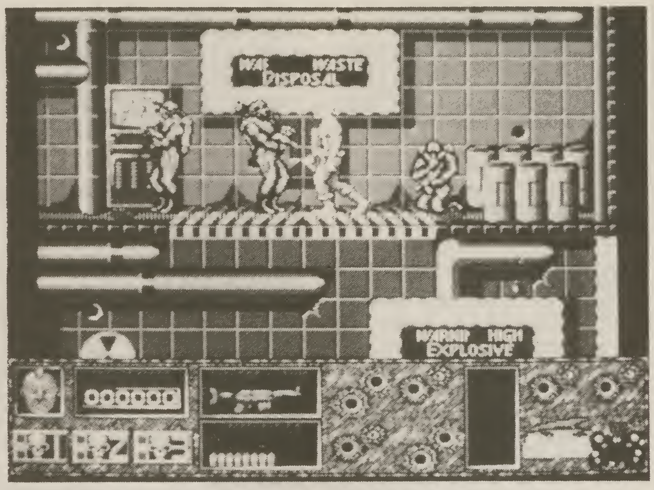

• Rogue Trooper is trying to clean up Nu-Earth, can you help him?

Cleal Music Code has just released a program which will find out how efficent your MIDI cables are and if indeed you're using the right ones at all. The software tests the leads by relaying information down them and then checking for errors. If you're not talking to your synth then the program *Hitched Pitch Fix* will cost you just £6 from Cleal Music Code, 5 Freshfield Close, Furnace Green, Crawley, West Sussex.

CLASH OF THE PC EMULATORS

The battle to rule the world of PC (cough) emulation is hotting up all the time. The whole thing started about five years ago with the release of the incredibly slow *PC-Ditto* PC software. The sales of that product convinced a lot of people that there is money to be made on a hardware solution. So the first emulators started to arrive. The early products like *PC-Speed* or *Supercharger* were quite slow XT emulators and so they were rapidly updated to support PC AT technology.

The main problem with those emulators was their price. These days you can pick up a PC with twin floppys and a monitor for four hundred quid, so why bother with an emulator? It took the Germans to instill some degree of value for money into the proceedings, and in the process they sparked a mini price-war. The German company Vortex released the excellent *ATonce* emulator which was the quickest of the crop and also the cheapest. Not to be outdone Gasteiner dropped the price of its AT emulator, *AT-Speed*, to £239.95. Meanwhile Condor Computer's *Supercharger* remained at £300 although it does have a megabyte of its own RAM onboard, making it great value for money. The ill-fated *PC-Ditto II* is currently priced at £229.95, although it's rumoured that it will be withdrawn from sale because it's impossible to fit the board inside most STs! As a side note it's recently come to light that Gasteiner is the sole importer of the *AT-Speed* board and Full Circle Technologies is unable to supply any of the boards – watch this space for further details.

TICK TOCK DISK CLOCK

Wackiest product of the week has got to be *Disk Clock* from Platypus Products. This freaky unit is an actual 3.5-inch disk with a quartz clock fastened onto the back. With Christmas only three months around the corner it could be the perfect present for any computer nuts hibernating in your house. Platypus Products, 84 Hopgarden Road, Tonbridge, Kent TN10 4QU.

ROGUE TROOPER

If, like me, you're a fan of *2000 AD* then the prospect of playing a game about one of the excellent comic characters should sound like a good deal of fun. The latest character to get the ST pixel treatment is Rogue Trooper, the mutant soldier famous for his blue skin and talking hand-baggage.

The program will be set in a prison environment, with Rogue's job being to find the traitor who killed his genetically engineered comrades. The game (it says here) will incorporate elements of shoot-'em-ups, beat-'em-ups and explore-'em-ups and the early screen shots looks very promising indeed. *Rogue Trooper* will be out at the end of September for £24.99. Read the review soon in *ST Format*.

ST PD

The ST public domain scene continues to flourish, with new releases coming in to the office every day. LAPD has just released four new disks which look excellent. Perhaps the best is a new virus killer on disk LAU21 with sampled sound and graphics by A N Cool of the Carebears demo group.

Other new disks are LAM9 which contains *James* an acc that performs a multitude of tasks and LAU20 which contains undelete, a file recovery program. All disks are £1.50: LAPD, 80 Lee Lane, Langley, Heanor, Derbyshire DE7 7HN.

Andrew Hutchinson

GAMERS! Turn to page 70 for tips, hints, news and reviews on the latest games

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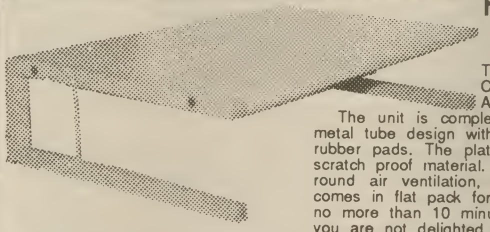

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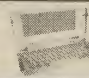

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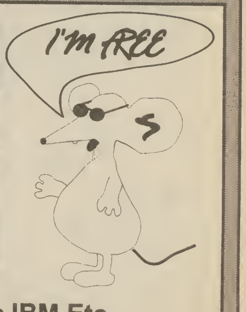

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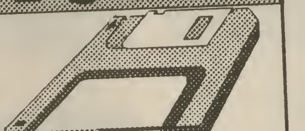

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AMIGA ACCESSORIES

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All STE computers come with 3 software titles :

First Basic, Music Maker and Organiser.

All STE computers are checked prior to despatch and all prices include VAT and 3 working day delivery by courier.

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DIY 1 KIT - 520STE to 1MB (2 x 256K cards)	**£39.99**
DIY 2 KIT - 520/1040 to 2MB (2 x 1MB cards)	**£119.95**
DIY 4 KIT - 520/1040 to 4MB (4 x 1MB cards)	**£235.00**

All RAM prices include VAT and delivery.

ATARI STFM POWER PACK

- **Atari 520STFM computer**
- **20 top selling games** (Afterburner, R-Type, Gauntlet 2, Super Hang On, Space Harrier, Star Glider, Overlander, Super Huey, Pac Mania, Nebulus, Eliminator, Predator, Xenon, Bombuzal, Bomb Jack, Double Dragon, Black Lamp, Out Run, Star Goose and Star Ray)
- **Mouse, Joystick and instructions**

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Hyper Paint, Hyper Draw and Borodino
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DISCOVERY SOFTWARE

First Basic, Carrier Command, Neochrome, Space Harrier, Outrun, Bomb Jack, STOS and ST Tour only

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- **Commodore Amiga A500 computer**
- **Television modulator + mouse**
- **DELUXE PAINT 2 graphics software**
- **BATMAN, NZ STORY + F18**
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- **ROBOT MONST, R/BOW ISLAND + F29**
- **and full instructions**

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- **Commodore Amiga A500 computer**
- **TV modulator, mouse, mat & 10 disks**
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- **Publishers Choice DTP software**
- **Maxiplan spreadsheet, Amiga Logo**
- **BBC emulator, Deluxe Paint 2**

ALL THIS FOR ONLY

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inc vat and 3 day courier delivery

A500 BASE PACK

- **Commodore Amiga A500 computer**
- **Modulator, Mouse + instructions**

ALL THIS FOR ONLY

£ 339.00

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Afterburner, R-Type, Gauntlet 2, Super Hang-On, Space Harrier, Star Glider, Overlander, Super Huey, Pac Mania, Nebulus, Eliminator, Predator, Xenon, Bombuzal, Bomb Jack, Double Dragon, Black Lamp, Out Run, Star Goose and Star Ray.

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ATARI

All our ST prices include: mouse etc. plus 5 disks of software including 'First Word' wordprocessor, utilities, 'Neochrome' graphics utility, game and demos.

NEW - 520 STFM DISCOVERY PACK

Good quality, good value package based around the 520STFM computer including 512K RAM, 1Mb Drive and built-in TV modulator. Also supplied is:

STOS Game Creator	Outrun
Carrier Command	Bomb Jack
Space Harrier	Neochrome
FirST BASIC	Atari ST Tour

plus 'Discovering your Atari ST' Book

£259.00
Including VAT and delivery

1040 STE PROFESSIONAL PACK

Excellent starter package, including the very latest 1040STE machine with 1Mb RAM, 1Mb Drive, plus the following extras :

Kuma Wordprocessor	STAC Adventure Creator
Kuma Database	Hyper Paint (STE version)
Kuma Spreadsheet	FirST BASIC
Kuma Business Graphics	'Prince' game

£429.00
Including VAT and delivery

520 STE POWER PACK

Amazing value, special ST package from Atari! Includes the very latest 520STE with 1Mb drive, joystick, mouse, user guide, 5 disks of public domain software, plus an incredible selection of chart-topping software with a total RRP of over £500! Software Included is:

R-Type	Pacmania	Out Run	Nebulus
Afterburner	Starglider	Bombuzal	Stargoose
Double Dragon	Super Huey	Xenon	First Music
Super Hangon	Eliminator	Gauntlet II	First Basic
Space Harrier	Predator	Black Lamp	Organiser
Overlander	Bombjack	Starray	

£339.00
Including VAT and delivery

520STE RAM upgrade to 1Mb, includes 2x256K SIMMS modules	£40.00
520/1040STE RAM upgrade to 2Mb, includes 2x1Mb SIMMS modules	£119.00
520/1040STE RAM upgrade to 4Mb, includes 4x1Mb SIMMS modules	£235.00
520STFM 1Mb Drive Upgrade Kit with full fitting instructions	£54.95
520STFM 1Mb Memory Upgrade Kit, requires soldering	£59.00
Mega ST1 with monochrome monitor	£599.00
Mega ST2 with monochrome monitor	£849.00
Mega ST4 with monochrome monitor	£1099.00
SM124 monochrome monitor	£99.00
SC1224 colour monitor	£279.00
Philips CM8833 14" colour monitor (stereo sound) c/w ST cable	£259.00
Vidi-ST 16-tone video frame grabber inc.digitising software	£89.00
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Amstrad PC Range

All Amstrad Products include 12 Months On-Site Maintenance

'LOCOSCRIPT PC'
FREE with any PC1640!

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All PC models include 'Top 10 Solid Gold' Games Package!

CREATE YOUR OWN HARD DISK CONFIGURATION FOR ANY 1512/1640/2086 MODEL !

Using a Western Digital Filecard, which includes XTree and SpeedRead software, we can upgrade the PC for you before despatch. Using the 'SD' column of the price table, simply add £225.00 inc.VAT for a 21Mb configuration, £239.00 for a 32Mb configuration, or £279.00 for a 41Mb configuration.

	SD	DD	AMS H.D.
MONO 1640	390.43 449.00	477.39 549.00	651.30 749.00
CGA (COLOUR) 1640	477.39 549.00	564.35 649.00	738.26 849.00
EGA (ECD) 1640	564.35 649.00	651.30 749.00	825.22 949.00
2086 MONO	433.91 499.00	520.87 599.00	694.78 799.00
2086 CD	564.35 649.00	651.30 749.00	825.22 949.00
2086 12" HRCD	564.35 649.00	651.30 749.00	825.22 949.00
2086 14" HRCD	607.83 699.00	694.78 799.00	868.70 999.00

upgrades / accessories

PC1512 memory upgrade to 640K	£39.95
Maths Co-processor 8087-2	£109.00
NEC V30 (8086 replacement)	£24.95
Archive XL 40Mb Ext. tape streamer	£379.00
Amstrad Modem Card V21/23	£99.00
Communicate Fax Card SR	£199.00
Enhancer 101 replacement keyboard	£74.95
3.5" drive (720K) for SD models	£79.95
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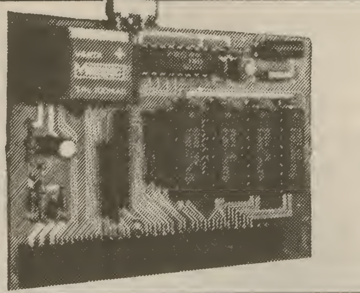
Genius GM6000 Mouse package	£34.95
Konix Joystick & Controller Card	£28.95

Low price External 3.5" Floppy Drive (720K), suits any Amstrad PC 1512/1640 inc. Double Drive and Hard Disk models, uses no expansion slots £99.95

Amstrad Laptop Portables

prices in brackets are excluding VAT.
N.B. Amstrad ALT Portables Do Not Include On-Site Maintenance

PPC512S	(£373.04)	£429.00
PPC512D	(£433.91)	£499.00
PPC640S	(£477.39)	£549.00
PPC640D	(£546.96)	£629.00
ALT286	(£1390.43)	£1599.00
ALT386sx	(£1738.26)	£1999.00



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Star LC15 wide carriage version of LC10	£329.00
Star LC24-15 wide carriage version of LC24-10	£409.00
Star FR-10 Professional 9pin 300/76 cps, 31K buffer, 16 NLQ fonts, EE-PROM configuration memory and 12 months on-site maintenance	£399.00
Star FR-15 9pin as FR10, wide carriage version	£499.00
Star XB24-10 Professional 24pin: 27K buffer, 4 SLQ & 25 LQ fonts with EE-PROM configuration memory and 12 months on-site maintenance	£499.00
Star XB24-15 wide carriage version of XB24-10, with 41K buffer	£649.00
Star Colour Upgrade Kit for XB or FR series printers (please state which)	£39.00
Hewlett Packard Deskjet Plus 300dpi Inkjet printer - special offer!	**£399.00**
NEC P2+ budget 24pin, special low price!	**£239.00**
Panasonic KXP1180 super 9pin with over 3400 typestyles, 11" carriage	£179.00
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Panasonic KXP1624 wide carriage version of KXP1124	£399.00
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Mannesmann Tally MT-81 130/24 cps	£149.00

ATARI® Lynx Portable Games System

- Fantastic hand-held portable 16-bit video games machine
- Excellent built-in high definition, full colour LCD display
- Capable of displaying up to 16 colours out of a possible 4096
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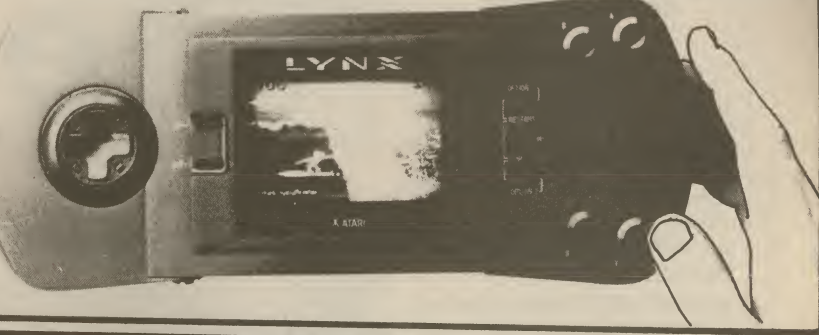
- Multiplayer Competitions possible using COMLYNX cable (supplied) to connect with other Atari Lynx systems
- Free California Games (multiplayer) game card supplied!
- Uses 6 x AA batteries (not supplied) or AC adapter (supplied)



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Game Cards now available :

Blue Lightning	£19.95
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Rampage	£22.95

SPECIAL DEALS

All A500 Packages also include the following :

Karate Kid II
Leatherneck
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Defcon 5
High Steel
Wordwright (w processor)
Nigel Mansell's Grand Prix
Better Dead than Alien
Super Huey
Goldrunner
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A500 512K Flight of Fantasy pack includes 4 software titles and TV modulator	£379.00
A500 512K Batpack includes 4 software titles and TV modulator	£379.00
Amiga 500 1Mb Batpack (*OR* F.O.F. Pack) features our 1Mb RAM Upgrade fitted	£415.00
Amiga 500 Batpack (OR F.O.F. Pack) with Drive includes our 3.5" External Drive	£435.00
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Kickstart 1.3 Upgrade pack	£29.95
MiniGEN Genlock Adapter	£95.00
Philips CM8833 colour monitor inc.cable	£259.00
Contriver Hi-Res replacement Mouse pack	£22.95
Amiga 500 dust cover	£4.95

CBM A590 HARD DRIVE

Good quality 20Mb Hard Disk from Commodore, including its own PSU. Features sockets for up to 2Mb of FAST RAM expansion (see below). 80ms Access time, with up to 2.4Mb/sec transfer rate. Will autoboot when used with Kickstart 1.3. Has built-in cooling fan.

A590 (20Mb) only £379.00
40Mb version only £499.00

A590 512K RAM Upgrade kit	£36.00
A590 1Mb RAM Upgrade kit	£70.00
A590 2Mb RAM Upgrade kit	£135.00

RAM upgrades fitted free when bought with A590.

PHILIPS 15" FST TV/Monitor (MODEL 2530)

With its dedicated monitor input, this model combines the advantages of a high quality medium resolution monitor with the convenience of remote control Teletext TV - at an excellent low price !

- ✓ Suits ST or Amiga (cable supplied)
- ✓ Teletext facilities; on screen graphics
- ✓ Full infra-red remote control
- ✓ SCART Input/Output Connector
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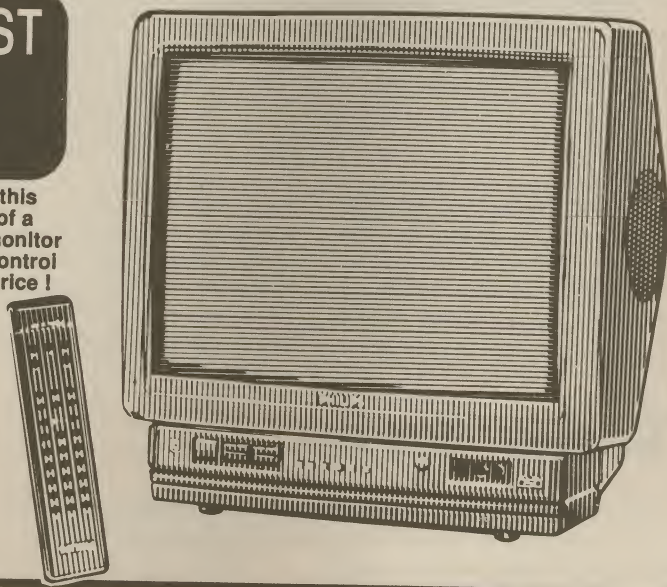

£269.00
Includes VAT, delivery and computer connection lead

ATARI® ABC-286

FREE with all ABC-286 machines : Logotron '8-in-1 Professional' inc. W/Processor, Database, Spreadsheet, Graphics, etc.

- ☆ 80286 Processor with 8 Mhz clock speed
- ☆ 640K RAM standard, expandable to 1 Mb
- ☆ 3 AT / XT compatible Expansion slots
- ☆ 1 RS232 Serial and 1 Parallel ports
- ☆ Disk controller supports 2 floppy & 2 hard drives
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- ☆ Video graphics adapter supports EGA, CGA, MDA and Hercules, with digital video port
- ☆ 102-key DIN spec. AT-Protocol keyboard
- ☆ Supplied with MS-DOS 3.3 and GW-BASIC

ABC-286 S.D./30 Mb without monitor	**£ 803.85**
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Optional 5.25" 1.2Mb Internally fitted floppy drive available £119.00

Prices Include VAT/Delivery

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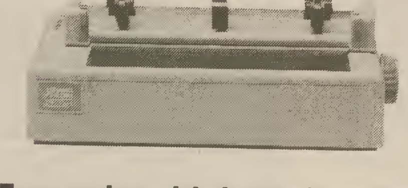

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- ○ 200 cps draft, 30 cps NLQ print speed
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Prices include VAT, delivery and 12 months on-site maintenance!

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FREE With All Models :

- ✓ 12 Months On-Site Maintenance
- ✓ PS2-compatible Mouse with software
- ✓ Logotron 'Eight-In-One' Integrated Package
- ✓ 'Top 10 Solid Gold' Games package

FREE WITH EVERY PCS286 : OLIVETTI DM100S 9-PIN PRINTER !
or, if you prefer, £129.95 inc.VAT allowance on another printer of your choice.

	SD	DD	SD 20MB	SD 40MB
PCS86 MONO	549.00 631.35	649.00 746.35	849.00 976.35	N/A N/A
PCS86 COLOUR	699.00 803.85	799.00 918.85	999.00 1148.85	N/A N/A
PCS286 MONO	N/A N/A	949.00 1091.35	1049.00 1206.35	1149.00 1321.35
PCS286 COLOUR	N/A N/A	1099.00 1263.85	1199.00 1378.85	1299.00 1493.85

- ◆ 101/102 key AT-layout PS/2 compatible keyboard (Mini-DIN)
- ◆ 1 x RS232 Serial interface and 1 x Centronics Parallel interface
- ◆ VGA compatible (OVC) display controller fitted standard
- ◆ VGA monitors: 14" Colour / 12" Mono. (dot pitch 0.39mm)
- ◆ Socket for Optional Maths Co-Processor
- ◆ Hard Drive versions: 20Mb (27ms access time) / 40Mb (29ms)

Logotron 'Eight-in-One' package includes Wordprocessor, Database, Spreadsheet, Graphics etc. 'Top 10 Solid Gold' games pack includes Arcade, Adventure, Creativity, Simulation & Strategy titles.

PCS 86

- ◆ NEC-V30 microprocessor 10Mhz clock speed, 0 wait states
- ◆ 640K RAM standard, upgradeable to 2.5Mb on motherboard
- ◆ Single or Twin 3.5" floppy drives with 720K formatted capacity
- ◆ 3 Full size XT-compatible 8-bit expansion slots

PCS 286

- ◆ Intel 80286 microprocessor 12MHz clock speed, 1 wait states
- ◆ 1Mb RAM standard, upgradeable to 4Mb on motherboard
- ◆ Single or Twin 3.5" floppy drives with 1.44Mb formatted capacity
- ◆ 3 Full size expansion slots; 1 x 8 bit and 2 x 16 bit (XT/AT style)

ACCESSORIES

5.25" 1.2Mb/360K drive with controller	£129.95
PCS 286 2Mb RAM Upgrade Kit	£119.00
PCS 286 4Mb RAM Upgrade Kit	£235.00

The CENTR

TWO PAGES OF COMPETITIONS, INSIGHTS, CHARTS, TRUE STORIES AND GENERAL TI

OPENING TIME

Welcome to the first Centrefold, a weekly autopsy of the twitching body of national and international multi-format computing.

While in the main body of *Express* you can read informed articles by experienced hacks; this week try, Cyberspace (on pages 58-60), Fractal Graphics (pages 72-73) and even The Future of Games (a mammoth 4 pager starting on 17). In The Centrefold you get to read scurrilous put-downs, biased views, contentious, abrasive, puerile, informative and downright daft letters, and hopefully some near slanderous stories (near slanderous because the Future Publishing lawyers, Mssrs Fox, Bingham, Skid and Sagoe, are none to keen on paying out wads of dosh to already filthy rich computer glitterati).

Prizes? We got 'em

There are prizes galore in the form of whatever I happen to have lying around the office at the time. So, when writing in, be sure to tell me which machine and disk format you use, otherwise I'll just send you a complete set of Osmonds albums (I should coco!).

Finally, as my blind, deaf and dumb granny used to say when bouncing me on my head, Enjoy! To be quite honest, I'm looking to you to write most of these pages anyway - freedom of speech and all that guff. And you can't say fairer than that can you? Right, that's that then, so read on...

FROM THE ARCHIVE

As we all know, *Express* is not merely a good read, it's also a respected journal of record. And this is what it reported or recorded a year ago this week:

POLL TAX POSITIONS

This is probably going to be number 1 on a series of quadrillions in the Poll Tax/ lovely Community Charge really (no bias here) versus the computer saga; but here we go:

The Data Protection registrar advised 300 Poll Tax/lovely Community Charge really authorities, to wipe the more sensitive information from their records or face possible prosecution. The only information they are allowed to have must be related entirely to Tax/Charge.

FAXAPHILE

The Amstrad fax was announced. According to *Express*: "This is understood to be a phone-fax-copier which will retail for £399." How right can you get. Michael Joyce Associates – Amstrad's PR company – have finally let big Keith Pomfret have a FX9600T fax to play with. It's a phone-fax-copier for around £399.

MAC THE KNIFED

Macintosh gracefully lowered the price of its Plus and SE computers. 27 per cent was hacked off. The company also launched its Laguna portable for 4,000. Spend! Spend! Spend!

PC ENGINE TROUBLE

NEC Corporation advertised the fact that PC Engines on sale in the UK were hookey goods. PC Engines were, and are, not compatible with UK and EEC PAL-based television systems. So if you had problems with the machines bought in this country, the message was don't call them.

MAGGIE WINS EDINBURGH FESTIVAL PRIZE

Margaret Hilda Thatcher, was the subject of an Amiga-animated film which won Mark Wirt first prize in the Amiga Centre Scotland's competition.

'Maggie Goes Green' saw her grace changing from a green goddess into a fire spitting, devilish harpie before finally replacing the Queen on a coin of the realm. The short was created using a 1Mb Amiga 500, *DigiPaint 3*, and *SA3D*.

LAST WEEK'S WINNER

Owing to a technical oversight, there has been no Centrefold caption competition for the last two years. To make up for this we have decided to send a prize to a randomly chosen Express reader. Well done Mr A P Brewer of Fylde. We think that your caption would have been: "Dammit, I thought the hippies had all died in 1977". A prize is on its way to you.

Tale Spin

Have heard any computer or technology related stories which made you gasp in amazement, or has anything happened to you which you feel should be related to the rest of the world? If so send the news to Tale Spin, New Computer Express, Bath, Avon, BA1 2BW.

Tale Spin is the area where you get to pretend that you're Arthur C Clarke.

The more outrageously unbelievable the yarn, the better. I am looking for stories of Munchhausen-like silliness. If they happen to be true, then all the better.

If you decide not to bother; you know – the fact that your office PC system crashed one summer aftenoon just when you were coming up to the year-end audit. And then, by coincidence, the chief clerk ran off to Brazil. I'll just have to tell all my interesting stories, like the one about the PCW which was haunted by the ghost of a mad vicar.

You get the idea I'm sure. As is normal practice there are prizes on offer for any story which makes it into print. Along with this goes the immense pride gained from seeing your story by-lined. Photographs which accompany the stories are also more than welcome and will be returned, if I get around to it. So don't send in any originals.

• Sir Dickie Attenborough, left-hand side in the crowd. Is he good with animals or what?

DEAR, DEAR DICKIE

So, to kick off (© Anco) let's barrel into a true story concerning myself, Colin Campbell, Commodore Business Machines, Peter Shilton, Mark Wright, Chelsea football club and a lift.

A few weeks ago we were invited, by Commodore, to Stamford Bridge to see Chelsea vs Derby County. Not only was the nosh laid on, the booze free and the day sunny, but Dave Beasant, the Chelsea keeper saved a penalty in the last minute. The final whistle went, the Blues had won, and Kelly Sumner of CBM was dancing around, waving his arms and shouting "My old man says you're a Derby fan. I said ..." you probably know the rest. Anyway, Col and I beat a hasty retreat to contemplate the news value of the day. Into the lift we went with a small, podgy old fella.

We all chatted about the penalty, and discussed tactics as you do. On the way out I mentioned that the gent was Sir Dickie Attenborough. "He's a director of Chelsea you know.", I said, all smug and clever-dick. "We'll I hear he's good with animals." Quipped Campbell. "Funny how the scum rises.", Sir Dick was heard to mumble.

I WISH I'D SAID THAT....

Have you read anything in a magazine, newspaper or even manual which made you laugh? Well send it into us. All ' I Wish I'd Said Thats' receive whatever we've got lying around the office. Here we go:

"Error, keyboard missing. Press F1 to continue." Error message on PC.

"The future is, and always has been, an interesting place." Andy Smith, reviewing Interphase for *Amiga Format*.

"I'm sorry, I can't tell you that, it's restricted." Switchboard operator at GCHQ when asked for the press officer's name.

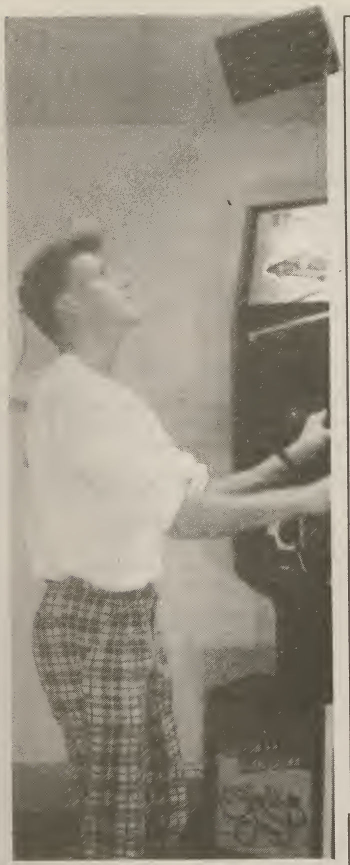
REFOLD

ENERAL THIS THAT AND THE OTHER WITH TIM SMITH.

A THOUSAND WORDS

Avoid cliches like the plague I was told at the Ms Joan Junor school of journalism. But I was always round the back of the bikesheds. So, a picture paints a thousand words and we will print any photograph you send in. Pictures of your four and a half year old son playing *Castle Master II* will go in, as will photographs of computers in strange places. Even pictures of you. Think how useful this will be the next time you want credit to buy one of the humungously expensive machines which are bound to the next big thing.This week it's post cards and a 4 year old gent.

You get your picture and name published in a nationally respected organ, they have to give you the dosh. Send all entries to: A Thousand Words, *New Computer Express*, 30 Monmouth Street, Bath, Avon, BA1 2BW. Make sure to tell us which machine and disk format you have, so that we can send you some smidgen of software to brighten up your day.



CAPTION FULL STRENGTH

The above photograph has been scrutinised by the collective *Express* team.

It has been deemed too irrelevant, absurd and tedious to print in the main body of the magazine. Do you have any ideas for captions which might brighten up its short photographic life? If you do, send them, on the back of a postcard, to: Stupid Ruddy Photograph Comp, *New Computer Express*, 30 Monmouth Street, Bath, Avon BA1 2BW. Prizes await the most aposite entries. Exotic postcards welcome.

READER'S CHART

Every week we will print a reader's chart of their 10 best software packages. This week it's mine. Send yours plus a picture to Bleeding Charts Club, *New Computer Express*, 30 Monmouth Street, Bath, Avon BA1 2BW.

1) Elite (Rainbird)
2) Autoroute Plus (NextBase)
3) PGA Tour Golf (Electronic Arts)
4) Protext (Arnor)
5) World of Soccer (CDS)
6) Kick Off (Anco)
7) Tempest (Atari)
8) CPM Plus (Digital Research)
9) Micro Design II (Creative Technology)
10) Edit Decision Maker (Micro Illusions)

THE TOSH TEN

The return of the useless listings. This week, 10 Irritating computer problems:

1) People telling you that you should have backed up, after a fatal crash.
2) Amiga snobs
3) Atari snobs
4) Cray snobs
5) Keyboard protectors which don't when you spill coffee on them.
6) Smartarse computer journos.
7) BASIC listings with 'just one small error.'
8) Whinging, flash Harry hackers.
9) Any computer jokes with byte in them
10) On-going jargon scenarios

Letter Spray

Want to be mentioned in dispatches? Send your letters to: Letter Spray, New Computer Express, 30 Monmouth St, Bath, Avon, BA1 BF1.This week's letter replies by Dr Johnson's housemaid's cousin's aunty Madge's ghost.

***Letter Spray* is a small corner of a forgotten field which will be forever enigma. Because this is the first production of The Centrefold, we obviously don't have any letters ready to print.**

Never daunted we shall lay down some basic ground rules so that everybody knows just exactly where they stand:

1) Any 'My computer is better than your computer' letters will be read asiduously and then passed on to whichever organisation is at the top of Interpol's most vicious list. We don't care who's computer is best. We just want to know what you do with them.

2) Abusive letters containing personal remarks about any *Express* staff or their relatives will be printed. (see rule 1)

3) No swearing. It is illegal to send coarse or abusive language via her majesty's post. And we don't want to upset the good lady (gawd bless her).

4) Any libellous remarks along the lines of "Alec Glucose is a mindless thug" will be read. If we get sued, all costs will be passed onto the writer; that's you pal.

5) No unpleasant animal byproducts to be included.

6) Exotic postcards will be printed. Please note that exotic does not have to mean pornographic.

7) Letters which the editor finds to be confusing, obscure, obfuscating, or clever-clever, smart alec will not be printed unless they are too funny to be ignored.

8) No whining. This includes moans about not having enough coverage of archaic, 2-bit, 1200 processor, mono, games machines which went out of date in the late 1960s. You can, however moan about the next door neighbour's *Xenon II* blaring out at 2 am and forcing you to punch a hole through their wall with an industrial strength laser. This is computer related and we want to hear about it.

9) No 'my 16 bit is better than your 8-bit' letters (see rule 1). Both types of machine are fine, and both serve their individual purposes. Before too long there will be long debates about 128 bits being better than 64 bits, so it's better to nip the whole thing in the bud now.

10) All these rules can, and probably will, be changed at any time. So, if you have any better ones, send them in and win whatever we have lying around the office. The only way to make this a success is if you write in. Don't leave it to someone else, because they'll win.

LYNTON DOES IT AGAIN

In 1890 a new form of Public Transport was born with the opening of the famous Lynton & Lynmouth Cliff Railway.

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In 1990 a new type of Public Domain Library for the S.T. has been introduced - a library where it's not the disks that are listed but the programs. You choose what you require and we make up the disks accordingly.

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Exmoor Software, Queen Street,
Lynton, Devon EX35 6AQ

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CBM64 1541 D/D, C2N cassette, all leads, some software, all boxed except D/D, perfect condition, but no manual hence £160. Tel: (0908) 220486 (with joystick).

STAR LC24-10, new boxed, unused £150. Tel: Peter (0883) 626570 evenings only.

PSION MC400 portable computer, built in software: W/Proc, D/Base, Diary etc. Also mains adaptor, parallel serial leads, 512K and 128K Eproms £790. Tel: Simon (0532) 446542 daytime.

ATARI 520 ST, 1 Meg disk drive, joystick, software, manuals, all boxed and as new. Would take printer in p/exchange or £225 cash. Tel: Waterlooville (0705) 257765.

DRAGON 64, twin disk drive, full amateur radio software £175, Dragon 32 still boxed, games and utilities, joystick £50, with tape recorder £75. Tel; (0404) 484 448 (Devon).

BBC Fleet St Editor, Admin Xtra, Print Master, Chauffeur, Input Course, 5.25 disks, Master Ref Manual Part 2, cassette, printer and monitor leads. Tel: 056587 3571 after 5pm.

1MEG Atari STFM, 40 Meg hard drive 1:1 interleave, Hi-Res monitor, 24 pin printer, A4 plotter HPGL compatible, WS3000 professional modem, all new, will split. Offers Tel: (0495) 272092.

CASIO FA100 interface for SF7500, almost new, interface, manual and 3.5 disk sell for £50. Tel: Leon Wong at work 071-721 4083.

AMIGA software: Populous £15, Castle Master £15, will swap either for Shadow of the Beast or Xenomorph. Tel: (0482) 572245.

BBC Master 128, twin turbo Co-Processor, Taxan colour monitor, disk drive, monitor plinth, games, manuals, desk and chair £450 o.n.o. Tel: (0594) 36595 after 7.00pm.

BBC B, DFS, double 40/80 track disk drives, mono monitor, joysticks, lots of software, games, education, business, Roms, excellent condition £375 o.n.o. Tel: Stuart (0734) 666073 evenings.

1541 disk drive for C64 £50 o.n.o. Kiteman C+ printer for C64 £50 o.n.o. Tel: Michael Frank 071-935 7360.

ATARI 520STFM 1 Meg drive, 1 Meg memory £320, external 1 Meg drive £50, Philips colour monitor £150, Atari printer £100. Tel: (0305) 822949.

TOSHIBA HX-10 MSX compatible data recorder, some software, books, Basic Reference Manual, all leads, £50. Tel: (0590) 645627 after 4pm. Cannot deliver.

SEGA megadrive (Scart Version) with control pad, power supply and 7 games only 7 months old. £300 o.n.o. Tel: 021-443 2038.

MAC Plus 1 Meg, 800K, as new £800. Tel: (0424) 715298.

DRAGON 32K, boxed with games and cassette unit, joysticks and books £35. Also 3" disks used and new offers for 12. Tel: P'Borough (0733) 40062.

TWO Racal, Milgo Comlink IV, Network modems 1200-19,200 Baud, both VGC with manual. Sensible offers to: Paul Smith, 54 Musgrave Rd, Shirecliffe, Sheffield S5 8WP.

ATARI ST upgraded 1Mbytes RAM dual disk drives, Citizen 120D printer, internal clock card installed, original games, all for £550 or o.n.o. Tel: 071-724 6665.

C64C with 1541 II D/D and games like Times Of Lore, Space Rogue, Rocket Ranger. Tel: Danny on 061-775 1004 after 6.30pm. Priced at £200 o.n.o.

SUPERBASE Personal 2, RRP £99.95, unused £25 o.n.o. Tel: evenings (0702) 521903 ask for Simon - Amiga disk.

AMIGA A500, 1 Meg, Citizen 120D printer, 200 disks, 2 joysticks, magazines, printer paper, manuals, sell for £445. Tel: Julian (0844) 290085.

ST 4 Amiga software games, business and utilities. Some unused, over 150 titles. Contact: Mr Scott, 37 Bamford Street, Clayton, Manchester M11 4FE.

AMSTRAD 128K upgrade kit for 1512, 18 chip set £16, 6 chip set 314. V30 Microprocessor to replace 8086 to improve speed £15. Tel: (0480) 300409.

ATARI 520 STFM, Kempston mouse, loads of software, Art packages, games, PD and serious. Cost over £1000, boxed as new (offers?). Tel: Paul (0606) 46769.

AMSTRAD CPC 464 with colour monitor, dust covers, joystick and over £350 worth of software £265. Tel: Nathan after 5pm (0252) 330906.

ATARI ST software for sale. GFA Basic 3 and compiler, games etc. All originals. Tel for prices: 021-472 1543 (Birmingham) after 6pm.

ITALY 1990 for Spectrum, won't load on my Sam, will sell for £7. Write to: Martin Waller, 19 Manor Rd, North Hykeham, Lincoln, LN6 8NP.

SEGA with five games: Vigilante, Altered Beast, Double Dragon, Choplifter Two, joysticks, light phaser, Speedking joystick, boxed 4 months old £120. Tel: 081-778 9163 after 3.00pm. BARGAIN.

CBM PC1 expansion box, 3 slot £60, 2 months old, 1 years warranty, or swap Epson compatible dot matrix printer plus cash balance. Willing to haggle. Tel: (0504) 49129.

SEGA light phaser, five games, boxed, joysticks, 4 months old, £120. Tel: 081-778 9163 after 3.30pm.

ATARI ST/E PUBLIC DOMAIN

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PC2086 32Mb hard disk, 640K RAM, PVGA 14" hi-res colour monitor, £700 worth of free software inc, Lotus + windows, mouse, 4 years warranty, machine only 3 months old, only £1400, reason for sale: I want a 386. Tel: 081-686 7926.

ORIGINAL, boxed, games for sale. Please write for details, nothing over a tenner! Please enclose a SAE: Dave Winder, 1 Thomas Wall Close, Sutton, Surrey SM1 1SP.

AMIGA, Prodata, Publishers Choice, DG Calc, DPaint 2 £120 The Lot, No Split! No offers!! Tel: (0703) 336957.

DATEL lightpen, interprinter, plus Tasword two software, to suit Speecy £20 the lot. Barry: 021-554 6395 (Birmingham).

SAM Coupe, worth over £300 with extras (comms i/face, technical manual, Scart lead etc). Mint condition, boxed, sell for £230 o.n.o. Phone Lee 021-476 1414.

SEGA megadrive, Pal version, only three months old, under guarantee. Includes Rambo 3, Kajaku. £185. Write to: Graham,43 Fairholme Rd, Hodgehill, Birmingham, B36 8HN. No callers.

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AMIGA software for sale Leisure Suit Larry 3, Fighter Bomber, Gravity £45 the lot. Write to: Mr S Law, 88 High Street, Crediton, Devon EX17 3LB.

ELECTRON games: Darts £2.00, Survivors £2.00, Ice Hockey £1.00, Last of the Free £1.00, Arcade Game Creator £9.00! Contact: P Costello, 27 Winscombe Drive, Vicars Cross, Chester, CH3 5LZ.

SPECTRUM Plus 48k, games, loudspeaker box, joystick, dedicated data tape recorder, manual, leads, PSU, in good working order, £80. Tel: (0707) 5944 evenings.

FOR Atari ST, That's Write (original) £25, CZ Android and Casio CZ230s, Midi keyboard £95. Contact: Philip Holland, Malvern. Tel: (0684) 572683.

SINCLAIR QL complete with software pack. Hardly used, will pay carriage, £60. no offers. Tel: 061-223 7531 after 7pm.

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ATARI 520 STFM, D/sided drive, over 70 disks, magazines, Amstrad CKX100 keyboard, excellent condition, boxed with manuals only £430. Tel: Newmarket (0638) 661377, David evenings.

BBC B, plus disk drive, printer modem and joysticks include, Interword processor and disks plus books, £225. Tel: (0932) 761418.

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CMB Shareware (Dept CE1) **7 Rookhope Grove, Bishop Auckland.**
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◆ GOODS WANTED

WANTED back issues of Amstrad Action (1-29) inclusive. Will swap for games. Write to David Hayes, 7 Glen Geran Crescent, Kilburn Park, Neilston, Glasgow for list. No SAE required.

OLD Spectrum classics wanted. Match Point, Knight Lore, Ant Attack, Wheelie, Stonkers, Trashman, Ground Zero, Jetpac, etc. £3 paid per title. Phone 021 56327 (Tamworth)

WANTED Amiga A500 with or without TV, with some software. Willing to pay up to £400. Tel: Tom (0793) 740028. Swap for CPC464 plus cash.

360K 5.25" PC compatible external disk drive needed. Ring KC any evening on 051-606 0644.

MANUALS, hints etc for Calcstar and Datastar urgently needed. Ring KC any evening on 051-606 0644.

WANTED PC engine or Sega Megadrive with or without games. Preferably newish and in good working condition with some guarantee. Reasonably priced. Contact Barnsley 746257.

WANTED 14" hi-res colour monitor, in good condition, for Amiga. All offers considered. Fair price paid. Could part exchange with Yamaha PSS 170 keyboard. Tel: (0462) 814672.

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HAS anyone out there got a MSX cartridge of Track and Field and Robocop on cassette? Will swap for MSX games Spectrum or C64 games. Tel: (0273) 304687.

ANY software for Sirius Victor 504. Have machine but nothing to start it up or run. Most urgently required. Ring Ron on (0803) 612942.

SWAP my ST, printer, second diskdrive, over £1000 worth of software, books, magazines for your Commodore Amiga setup. Phone James on (0689) 50404.

AMIGA 3.5" drive wanted. Will pay approximately £30. Also want Star LC10. Will pay approx. £70. Ring Tony on 021-558 6421.

WANTED A PSU and a cassette deck. C64 compatible. Price negotiable. Demos + PD also wanted. Write to: J O'Brien, 34 Berkeley Road East, Hay Mills, Birmingham, B25 8NP.

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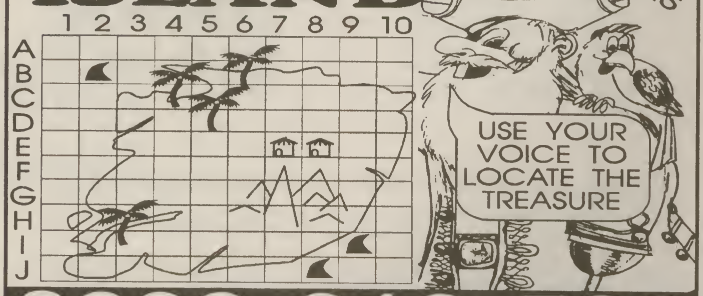
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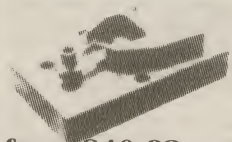

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CONSOLE ZONE

Your weekly guide to the world of console gaming with Richard Frederick

NINTENDO GAMEBOY

Two enterprising companies in American have solved the annoying problem of playing Gameboy games in poor light. California-based Vic Tokai Inc. has developed the Lightboy, an add-on accessory that allows you to view the Gameboy's screen with light through a magnifying glass. Meanwhile, Nuby Manufacturing has produced a more compact device than the Lightboy. Games Lights fits snugly over the screen and is perfect for playing Gameboy games at night. Game Light costs $9.95 (£5.50).

You can contact Nuby on 0101 603 5328724.

PLAYING TIP

First 10 level passcodes to *Mickey Mouse* : 1. SSSS 2. SZWS 3. ZS2S 4. ZZPS 5. SW3S 6. SXES 7. ZW4S 8. ZX9S 9. WSRS 10. WZFS

SEGA MASTER SYSTEM

US Gold is putting the finishing touches to its first four Sega Master games: *Impossible Mission, Gauntlet, Paperboy* and *Indiana Jones and the Last Crusade.* All four games will be available before Christmas.

Based around the third, and probably best, *Indiana Jones* movie, the *Last Crusade* video game is a rather uninspired and disappointing arcade adventure. You take the role of the infamous archaeologist-adventurer in his quest for the Holy Grail. After escaping the perils of an underground labyrinth and travelling circus train, you must infiltrate the nazi's castle-headquarters situated in the Austrian Alps, before your final confrontation with destiny in the Valley of the Crescent Moon. The Sega Master sprites and backdrops are detailed and very colourful and the Indy theme tunes play happily along in the background. But just like the computer game versions, *Indiana Jones and the Last Crusade* may prove too frustrating an adventure for the average hero.

PLAYING TIP

Three *Action Fighter* passwords: DOKI-PEN, HANG-ON, GP-WORLD.

ARE YOU A GAME CHAMPION?

Have you any video game tips on the Sega Megadrive, Nintendo Gameboy, Sega Master System, Nintendo Entertainment System, PC Engine, Atari Lynx or SNK Neo-Geo consoles? If you have, why not share the knowledge with your fellow video game players? Send your playing tips to: The Console Zone, *New Computer Express*, Future Publishing, Beauford Court, 30 Monmouth Street, Bath, Avon BA1 2BW – or fax on 0225 446019.

SEGA MEGADRIVE

Virgin/Mastertronic is gearing up for the UK launch of the Sega Megadrive at CES in September. For £189.99 you get "The ultimate in games console technology," and a 'free' copy of *Altered Beast*. 20 Megadrive games cartridges will be available before Christmas, including *Golden Axe* (£34.99), *Ghouls 'n' Ghosts* (£44.99) and *Revenge of Shinobi* (£34.99). The optional £29.99 Power Base Convertor allows you to play Sega Master games cartridges on your Megadrive, thus giving you immediate access to over 100 video game titles.

Populous, the award-winning strategy game from Electronic Arts, has made a move onto the Megadrive. This new title has gone straight to the top of the charts in America, and should do the same when it is released here in the autumn.

PLAYING TIP

Put *Phantasy Star II* into super slow motion by pressing Start to pause the game, holding down button B and repeatedly pressing the C button while the pause mode is activated.

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ATARI LYNX

The classic coin-op, *Ms Pacman*, is currently being converted to the Atari's software-starved colour hand-held console. Programmed by Jerome Strach and Eric Ginner, this Tengen game will include all the features of the original arcade game, as you guide your 'Smiley' sprite around many manic mazes devouring dots and gobbling ghosts.

Other Lynx titles under development include *Klax*, *Paperboy*, *Vindicators*, *Roadblasters* and *Rygar*. All these games are due to be released before spring '91.

NINTENDO NES

Nintendo is organising a massive games exhibition and tournament in America. The Nintendo World Championship is touring over 30 US cities in a search to find America's top video games player. The tournament is open to the public, and promoters expect over 1.5 million video game players to attend.

***Silent Service*, the classic sub-sim from MicroProse, has been converted. Console control is through icons, but *Silent Service* is still the best way to test-drive a WWII submarine.**

NEC PC ENGINE

Loud Guitars from Warner New Media is a unique CD-ROM product for the PC Engine. The title charts the history of the electronic guitar with audio-visual interviews with rock legends such as Chuck Berry, Van Halen and Jimi Hendrix. Platinum Trax titles feature music, narration graphics and text.

PLAYING TIP

For 30 games instead of the usual four in *Gunhed*, simultaneously hold down buttons I and II, switch your machine on and press Start.

SNK NEO-GEO

The world's most sophisticated video games console is going to be officially launched in the UK this week at the Computer Entertainment show (CES).

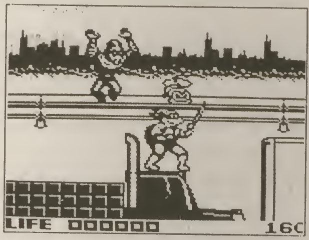
Supported by a whole host of dedicated silicon for graphics and sound, SNK's Neo-Geo (New World) comes as either a fully fledged arcade machine or home console. Its most novel feature, however, is the capability to use games cartridges up to the size of 330-megabits (64Mb). This compares to an average Sega megadrive cart size of 4-megabits (512K). Unfortunately, this means Neo games are very expensive. In Japan, Neo-Geo 40-megabit games cost in the region of 28,000 yen (around £110). The console itself costs 58,000 yen (around £230). Official UK prices will be announced at the show. There will be at least four titles available at launch: *Magician Lord, Baseball Pro, Nam 1975* and *Golf Master*. More games carts will follow in the autumn. Japanese gamesplayers can avoid the huge cartridge costs by renting Neo-Geo games for about £2 per night. It is hoped a similar scheme will be introduced into the UK.

For further Neo-Geo details contact: De Gale Marketing, on 081-965 8199. CES will be held on September 15-16 at the Earls Court.

GAME OF THE WEEK

Teenage Mutant Ninja Turtles • Konami • Gameboy • £22

You've seen the teenage cartoon series on TV, you've chewed the mutant bubblegum, you've read the ninja comics, you're waiting for the turtles movie, and now you can play the *Teenage Mutant Ninja Turtles* video game.



The pizza-eating, sewer-dwelling fighters for truth, justice and the right not to be made into turtle wax, are now kicking butt on the Gameboy. Make no mistake, this game is shred-hot! Playing each of the four lovable but over-hyped turtles, you must rescue April from Shredder and his thugs. The game features 15 levels of mutant mayhem, with power-up pizza slices, piranha-infested rivers and bug-eyed bozos. Infinitely superior to the dedicated Konami hand-held game, *Teenage Mutant Ninja Turtles* on the Gameboy captures the spirit of the cartoon series excellently, with large detailed sprites, smooth parallax-scrolling backdrops and infuriatingly catchy turtle tunes. *Teenage Mutant Ninja Turtles* is one the best Gameboy titles released this year. Go for it dudes.

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ATARI ST - Paul Glover, The ST Club, 9 Sutton Place, 49 Stoney Street, Nottingham NG1 1LX. 0602 410241.

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THE PD COLUMN

There's a lot of software out there that will cost you no more than postage and packing. Adam Waring investigates how you can get something for nothing.

Good Heavens above! A public domain program called *Planetarium* from Softville lets you scan the stars from the comfort of your armchair. No longer will you have to stand outside on those chilly December evenings, with nothing but a cheese sarnie and a flask of tomato soup for company. The amateur astronomer's friend takes place of the telescope, and opens up a whole universe to you.

What's more, there's no worry about the weather. As far as *Planetarium* is concerned, there's no such thing as a cloudy night. Daytime viewing is in order too. And you can even see things that you can't see, if you see what I mean.

Bung the disk in the drive, and away you go. Both mono monitor and colour screen users have been catered for, there's a version for both on the disk. On loading, a title screen comes up, informing you that the program was written many years ago by Deltron software, and has been released by Atari into the public domain.

TOP OF THE WORLD

First you're presented with a world map. You can move the cursor all over the screen to select your viewpoint of the universe. The whole of the earth is available. You can choose to base your sight-seeing activities anywhere from the Peruvian mountains to Cheptsow – even the middle of the Atlantic Ocean is possible. Presumably you have an imaginary boat at your disposal.

After you've selected the perfect star-gazing location, a mouse click at the top of the screen takes you to the stars. Unless you're lucky enough to have a battery-backed clock on your ST, you'll be seeing a universe of the future. But you can change it to the present, or any point in time that takes your fancy.

TIME OUT

The time and date can be set easily enough, by clicking on the parameters at the right hand side of the screen. Once you've set the calender and clock, it's time to start things rolling.

The settings menu allows you to use either the Gregorian calender or the more familiar (to live people anyway) Julian time-scale. Things are easier if you set the computer to automatically adjust between the two, depending on the date.

You can view the skies in real time, or speed things up by a factor of up to 64 – just over a minute quicker than reality.

You can also select the angle of what you see as you stare open mouthed at the skies. Your line of sight can be squeezed down to four and a half degrees, or widened to an all encompassing 72 degrees.

The stars themselves are dots on a screen. The magnitude can be set to three levels for better detail and you can also alter your bearing. Two sets of arrows allow you to face towards the main compass points. You can fine tune the direction you're facing too, and alter your elevation.

You can look neck-crickingly upwards, or stoop low enough so that you actually see your feet on screen! Below the horizon the ground is green. You can still see things through it though, and keep track of planets and stars that would normally be well out of view.

The bright blue sky doesn't block your vision either. Despite the sun being high in the heavens everything is still discernible. As the sun sets, the sky turns through gentle hues from blue to black – a nice touch.

STARING AT THE DOTS

It's all very well staring at all these dots on screen, but it's little good if you don't know what any of them are. Luckily there are several options to make your star-searching easier.

Planets can be made to stand out from the clusters of stars by setting the symbols option. The correct astronomical symbol then appears next to each planet.

Galaxies and nebulae can be switched on. They cannot normally be

Lorenzo's Domain

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seen, and bring a much more realistic view to the sky at night.

Constellations can be named too. A three letter abbreviation can be made to float along next to the terrestrial bodies as they make their way across the skies.

PATRICK MOORE

Constellations look much more recognisable with the lines that so many of us are used too. All the major ones are in there, as well as several that, I suspect, even Patrick Moore has never heard of.

It doesn't stop there. You can keep tabs on any of the planets and constellations. Click the tracking on, select your heavenly body, and the viewpoint is constantly updated to keep the chosen object well within your viewpoint.

The program is also a veritable mine of information. Data on every one of the thousands of stars is available. Simply click on it, and the data can be scrolled along at will at the bottom of the screen.

The amount of information offered is variable, depending on the object's importance. It can be anything from a catalogue number, magnitude rating, class and distance, to a fully detailed account about the history of the star/planet.

There's just so much to this program. When the moon is on screen, a portion of it is shaded to show its current phase. If you happen to set the date between September 1985 and August 1986, then you'll even see Halley's comet up, and making its once-in-76 yearly trip through our solar system.

Planetarium is a truly brilliant piece of PD. There has obviously been an awful lot of effort gone into the programming and collation of the data. No ST user deserves to be without this wonderful piece of software. ■

DON'T SEND IT IN

We know you're out there; public domain libraries who are just too shy to come out into the open and admit it – you have some great software on offer.

Don't worry, if you send us your disks we absolutely promise, word of honour, we won't mention any of them, or print your name and address, OK?

WHERE TO GO

Softville, Unit 5, Stratfield Park, Elettra Avenue, Waterlooville, Hants PO7 7XN. Telephone 0705 266509. The Softies supply PD for both ST and Amiga users. Prices are £3 per disk, but it gets cheaper the more you order.

NEW LIBRARIES

New public domain libraries are springing up all the time. I've received communication from several recently, all desperate for that little bit of publicity that'll set the ball rolling.

Well, how could I refuse? Remember, if you are in the process of setting up a library, no matter how small, I'd be interested in knowing all about you. Just send a sample of your software, along with all your important details and I'll do my best to give you a mention.

AAUG, or the Association of Atari User Groups will be of interest to Atari owners. They describe themselves as a PD swap- shop for ST users. Their only charge is a postage stamp!

All they ask is that you send *any* PD disk along with the stamp, and they'll send you their catalogue disk with all their details in exchange. You'll find them at 45 Coleburn Road, Lakenham, Norwich NR1 2NZ.

Amiga owners may like to take a look at Rouge PD's catalogue. They charge a measly £1.25 per disk, most of which seem to be demos from what I've seen.

To get hold of a catalogue simply send a blank disk and an SAE to Rouge PD, 11 Denmark Drive, Sedbury, Chepstow, Gwent NP6 7BD.

If the CPC is your machine, then DPD could be the latest library for you. They are starting up with lots of demos, picture disks, and animations. Prices are set at £4 for a double sided disk, and £3.50 for single sided. The price drops to £1 and 50p respectively if you supply the disk.

The catalogue disk will cost you 50p, plus a blank disk. Send it to: DPD Public Domain, Ruxley House, 28 Mount Hermon Road, Woking, Surrey GU22 7UH. Or give them a bell on 0483 763 223.

Finally, owners of the SAM Coupé needn't feel left out. Fastline are a library dedicated to supplying PD for the Speccy compatible micro. It's disk only, and the library's proprietor is currently looking to expand the library, so if you've written any PD quality Sam software, you now know what to do with it.

The library supplies a disk-full of PD for just £1 if you supply them with a blank disk. You'll find them at 1 Ryelands Place, Kilgetty, Dyfed, Wales SA68 0UX.

That's it for this week: at the risk of repeating myself, remember that the public domain offers the best fun you can have for free with your clothes on!

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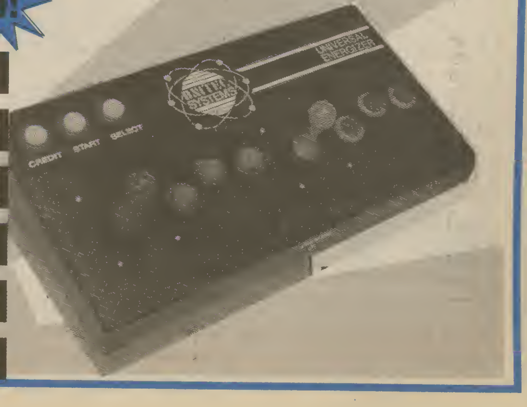

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THE ATARI ABC

Now, there's a PC-AT compatible that not only solves problems like other AT compatibles, it also solves the one problem that its predecessors have created ... affordability.

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The ABC is a reliable, high performance computer, built to exceptionally rigorous standards. It is well designed, to a state of the art specification, maintaining maximum expansion capability for the future. This includes up to 4Mb of RAM and 3 AT expansion slots. Plus, unusually for a PC at this price, the ABC has the ability to install two or three extra drives, with the cabling already inside the CPU.

The ABC has a host of impressive features, all built-in as standard, encouraging simple installation and ease of use. In addition, the ABC's small footprint and quiet operating, mean that you will notice it less on your desk than other PC's. Except, of course, when you begin to take advantage of its AT power.

At its remarkably low price point, the ABC is ideally suited for home, office and educational use and will take full advantage of the vast range of PC compatible software. And, with 12 months FREE on-site maintenance (8 hour response), you can rest assured that your ABC will be fully supported.

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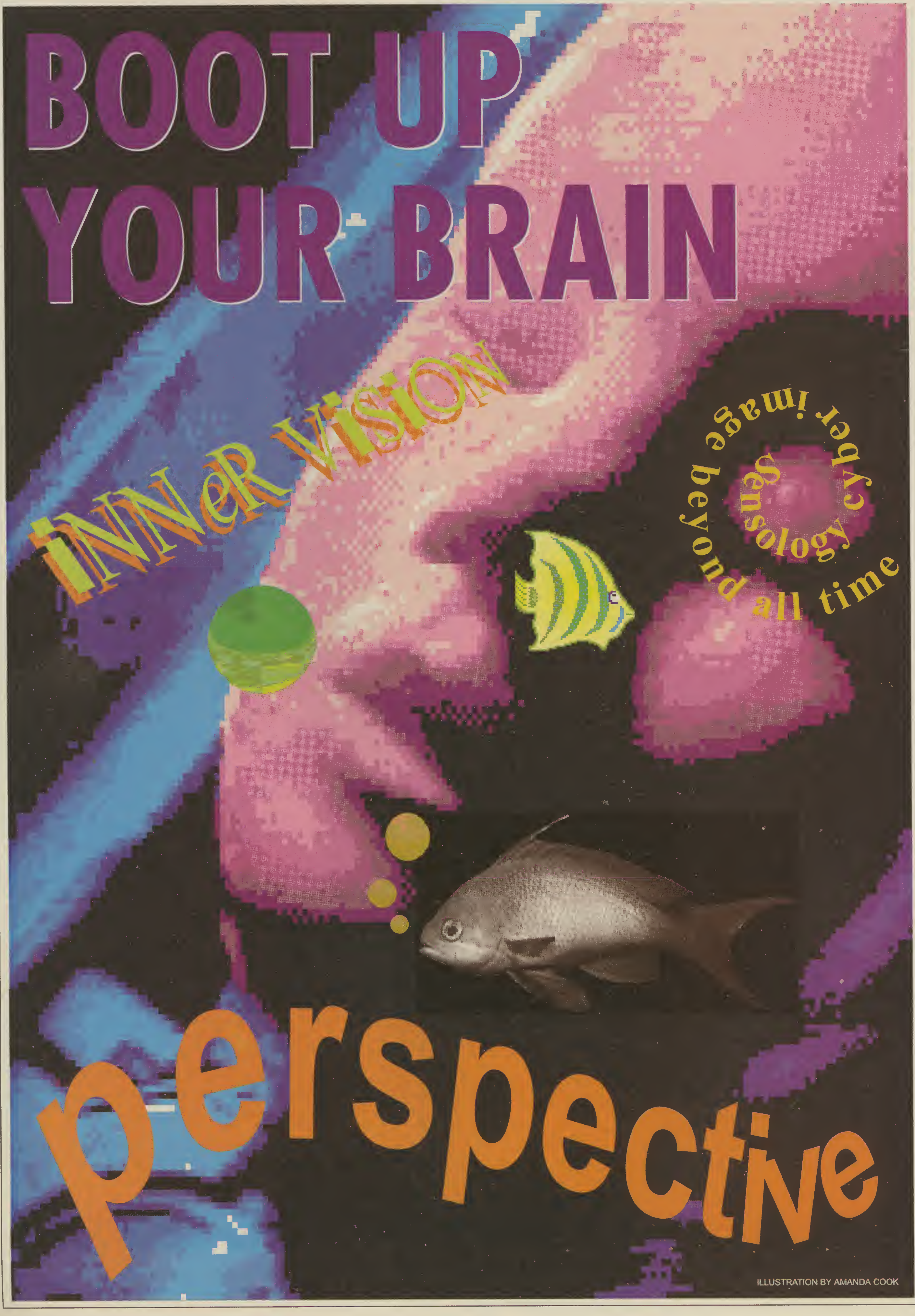
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ILLUSTRATION BY AMANDA COOK

What will it be like when you can walk into a new life created inside your computer? Express continues its voyage into the future with a look at the mind-expanding world that is virtual reality...

Have you ever wanted to be a honey bee floating through an English garden? Or perhaps a self-playing electric guitar which can dance? Maybe wandering around 16th Century Venice, or 23rd Century Saturn catches your fancy? Or burrowing through your own intestines? This, believe it or not, is the computer entertainment of tomorrow.

Confident predictions are being made that within a few years you will be able to be anything, go anywhere and experience whatever you choose in an alternative reality carved out of digital technology.

These predictions are not being made by loony scientists or over-ambitious corporate suits, but by an organised movement with firm bases in the world's great technical centres. Silicon Valley and Tokyo have gotten over the hype and are working on the real thing.

Virtual reality can already be bought at a price. Something in the region of $200,000 will suffice, and for that you can stroll through an environment which looks like Toontown. However, this mad price tag is the stock of an outrageous technology which could become the single most important feature of 21st Century entertainment. Its impact could exceed that of bland, two-dimensional television.

Today's science fiction is less concerned with space exploration, aliens or philosophising about the future than with the possibilities of computer technology (*Robocop, Total Recall*). Science fiction has already laid down the ground rules through writers such as William Gibson and Rudi Rucker, and more recently through the exploits of Hollywood.

Now the pioneers are taking the lead and, instead of compromising, are going all the way. As the possibilities of this entertainment dawn on more and more people so the technology will be pushed harder and harder.

• *Lanier: "I will see off television."*

The days when people said "Wow" are over. People are now saying "When?".

COMING SOON

Jaron Lanier, boss of VPL and inventor of the dataglove and virtual reality (VR) headset, is currently selling his virtual reality system for $200,000. He reckons advanced systems will be available by the end of the decade at about $250.

• *Nintendo's Powerglove and VR headset: Seriously unconventional but both are the product of heavy duty research budgets.*

To 'play' the user slips on a suit, datagloves and a helmet all of which sport a mangle of perplexing wires and leads. In front of each eye sits a three-inch colour screen. These completely obliterate the outside world. The whole thing is attached to powerful computers which generate the kind of visuals currently being thrown up by custom-built supercomputers.

The gloves and the rest of the suit act as controllers for movement within the environment. This

➤

LIKE A SEX MACHINE

Already the cyber cognoscenti are talking about virtual reality sexual experiences.

The theory is that, the suit one wears will be implanted with thousands of electrodes which can, er, stimulate. Apparently this item of clothing can be best described as a giant condom but we'll call it a giant body sock.

Once the (ab)user has jacked in they will be able to interact with other characters who, in reality, are positioned miles away.

Say that person sees a puppet which takes their fancy. They can snuggle up and do what is completely unnatural with each other's image. Each will be sitting in their own rooms moving about in a most unusual manner. If the landlady stumbles in she'd probably get the fright of her life.

Anyway, the consequences of both person's movements are sent back to activate the electrodes and after that it all gets a bit too weird.

Of course this all depends on the success of feedback research – as well as on the legality of the whole thing.

VIRTUAL REALITY – ON THE AMIGA

Toronto firm Vivid Effects has developed an Amiga-based video system which enables users to interact with video and graphic images. A digitised image of the user prancing about in front of the screen becomes part of its video output

The *Mandala* system 'watches' how the user's moves in front of the screen and, utilising 9Mb of RAM, it is able to calculate their relative position quickly enough to re-orientate the graphics code in accordance with their movements.

The process is carried out in real time so there is no delay between the user's movements and those on-screen.

In this way the user can enjoy sports with players who aren't there, or play musical instruments which only exist as graphical images.

Mandala features a 68000 processor, Amiga graphics chips and a souped-up maths co-processor to handle in-coming video signals from a camera mounted above the monitor.

Buyers wanting to have their own system can expect to lay out at least £10,000 for a basic system, but a home version is planned which could cost as little as £600.

ALL OF US IN WONDERLAND

The differences are blurred but, on a simplistic level, virtual reality is a medium in which an individual can explore their own world; cyberspace is an environment where, not only ca we interact with computer generated images of the non-existent, but with images of real people.

The computer acts as a gateway to an electronic city, linked on a futuristic telephone network, where millions of people interact every day.

Its uses go far beyond the perimeters of entertainment and leisure (we're talking military, business and just about any function you care to mention) but in this global network will be the ultimate fun-park and the ultimate multi-user game.

The theory and the name were first put forward by Gibson in *Neuromancer* and has clearly caught on. That book sold 500,000 copies worldwide.

Since then thousands of people have dedicated themselves to living in a pseudo-cyber world. Hackers and such spend all their time meandering around computer networks. There are innumerable bulletin boards and magazines dedicated to something which doesn't really exist.

Gibson's cyberspace was a frightening place where you could quite easily end up with your brain cells resembling a mushroom and tomato omelette. No doubt some aspects of cyberspace will be as dodgy as The Bronx at four o'clock in the morning but a restrictive device will lead the thrill-thirsty throng through the nasties to the fun bits.

Along with all the talking bananas and alternative dimensions will be other people, real people, to play with. These are called 'puppets' and, while you can touch them in a cyberspace context, they could be on the other side of the planet.

VPL, Jaron Lanier's extraordinary company, has not only devised VR kit for the individual but a mini-cyber experience for two people.

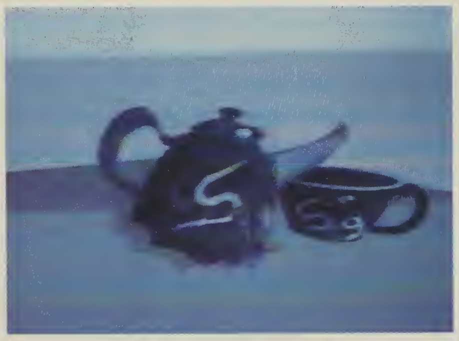
It's really just two suits and headsets linked up to the same computer. In one scenario you can shrink to the size of a small child and play little games. But your playmates could well be represented in any form.

It's all pretty difficult to imagine, let alone explain , even for the likes of Lanier. But in cyberspace you'll be meeting up with alternative images of other people.

Go in as Michael J Fox if you like or maybe the March Hare, and meet up with anyone at all...

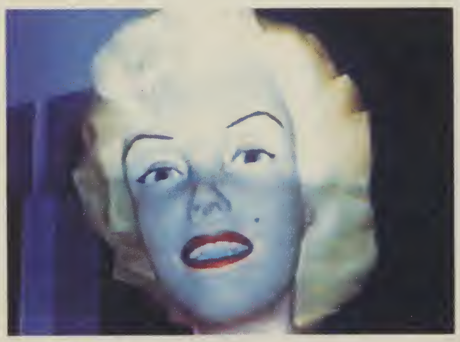
motion is achieved by pointing in the appropriate direction (including straight upwards). It is possible to pick up object by hand and, although there is no physical feedback, the object is in the user's hand because they can see it (if you get my drift).

If they stumble through a wall, out of the experience they'll come into a grey nothingness and a jolt backwards will bring the player back into the more secure virtual reality.



• *You can go into the teapot and pour yourself out.*

Today's surprisingly advanced, though still primitive, technology will allow a user to 'wander' around a room and view it from any conceivable angle (even a lightbulb's view).



• *Hello Norma Jean: meet the famous, dead or alive.*

To an observer the hardware is almost as cumbersome as a space suit. The user will be strapped in to the most preposterous suit, making the elegant movements difficult. Like dancing in the bedroom, it will probably be best done in private.

Inside this world there are no laws of nature, no logic – rather like a cartoon. Fruit and vegetables can dance and sing or turn into psychotic killers. Trees talk, numbers fly around like butterflies.

You can take any form that suits the world you inhabit. Your perspective can be that of a man, a mouse or a missile.

There will also be characters with which you can interact. Talk to John F Kennedy, spar with Jack Johnson, wonder at Mary Pickford, have a laugh with Sid James.

CURIOUSER AND CURIOUSER

These are bland and uniform examples. The whole place gets curiouser and curiouser the more you think about it. Try this:

"I leave Al Pacino arguing with Marlon Brando. Mother and I fly to Mrs Davis' place... Mrs Davis' lives in the side of a scooped out water melon. She has a beautiful sphinx with her, drinking milk from a bowl. I shrink immediately and climb into her skin. It's easy to find the tumour because the bad cells are just so noisy... just as I'm starting to appreciate her artistry there's a hand on my knee. Two squeezes – it's the wife.

"I take off the goggles, turn off the interactive disk and close down the cable. Can't afford to leave it running, the hire rates are prohibitive."

Little wonder that the *Wall Street Journal* headlined its article on VR "Electronic LSD". But it's much more controlled than mind-bending drugs. You are the boss. If you want to get out then switch off. Being engrossed is not the same as being trapped.

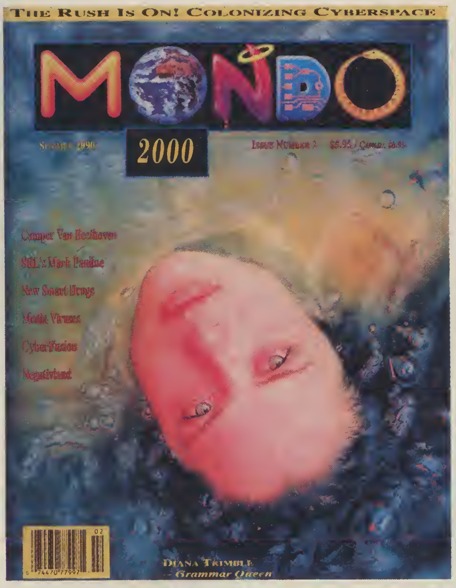
Nevertheless, it could get scary in there and already manufacturers are building emergency exit buttons into systems. There will be casualties, but only social ones. Already, a large number of clapped out 1960s hippy-types are hanging around on the edges spouting utter nonsense.

But it's not just for the nuts who can't abide the real world. *Sunday Times* journalist Sam Kiley tried it out at VPL's studios.

"Entering a world entirely generated by computer is a little disconcerting. I felt slightly sea sick. In reality I was in a pre-fab room in an industrial park on the outskirts of San Francisco; but in virtual reality I walked down a corridor with walls made of what looked like astroturf. I reached down to pick up a top hat which turned into an rose. A banana came spinning towards me. I caught it but it continued to rotate through my fist so, slightly horrified, I dropped it."

STRANGE CHARACTERS

There are still a large number of pretty strange characters on the case though. Try this advert Californian mag *Mondo 2000* for a 'psychoactive' soft drink:



• *Cyberspace mag* **Mondo 2000** *is a weird and wonderful guide to all things wild and wired.*

"The next time you're exploring cyberspace, make sure you fire up your synapses with neurotransmitter-boosting designer foods: scientifically proven hardware and wetware accelerators for your brain."

This brand of silliness is worth a giggle but only acts to deter would-be supporters. *Anarchy* magazine described the whole scene as:

"A superficial but voyeuristically ecstatic vision of New Age hype obscenely coupled with the self-identified leading edge of the technological illusion." Well that's one way of putting it.

Still, NASA believes VR will be most useful as a method for training astronauts and is spending a great deal of money on research. The Massachusetts Institute of Technology's Media Lab is also engrossed in similar projects but is not very keen to divulge its interests and the extent of its research. *Express* attempted to interview one scientist and was refused in no uncertain manner.

But characters like Lanier are only too pleased to air their views and predictions. By far the most advanced developer, this 29-year old college drop-out has already brought the Nintendo PowerGlove to market (nothing to do with the dataglove).

His appearance not only belies techno wizadry and wild imagination but also shows a surprising level of sanity: "The computer is meaningless. The only thing that's important is human experience." He says the whole point is to bring affordable VR to the people.■

Thanks to *The Sunday Times, The Guardian, Mondo 2000, The Cyber Times, The Face, I-D, ACE,* and *Amiga Format.*

FLIPPED OUT

Take cyberspace one step further than all but the most forward thinking developers. What if you could do more than see, hear and interact with puppets and characters in virtual reality? What if you could sense them, or feel them?

The technology does not exist in any form other than as fiction. But the idea is that the suit you wear not only acts as a directional device but also as a receiver for alien movements through built-in electrodes. It is crazy but if you were a real head-case playing in a violent virtual environment it might be possible to really get hurt in a computer game. Or maybe worse.

Other theorists are fond of talking about neural implants which would eventually replace headsets. These would 'cut out' what your eyes tell you so that your brain only sees and reacts to what the implant is suggesting. Phew.

WHAT'S IN A WORD

The word cyberspace has been trademarked by US firm AutoDesk. It says the name has been grabbed, not for its own uses, but to prevent a multi-national hogging the limelight. Therefore it is a generic term. The word is emotive and no company, including AutoDesk, can use it to brand a product.

NEW CYCLE

An abundance of peripherals with which you can play will also be available for VR. Take an exercise bike. Instead of puffing your way in front of the Test match you'd be cycling over the Grand Canyon or through the Horsehead Nebula.

Already Nintendo is experimenting with primitive versions of this for its Super Famicom. Konix put the theory forward with its Multi System which was based around alternative control methods such as motorcycle handlebars or flight control yokes. That has thus far failed to appear on the market.

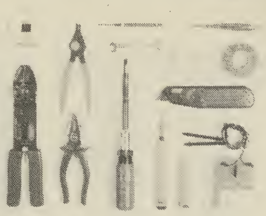
CYBERSPACE CASUALTIES

One real fear is that virtual reality and cyberspace will become dangerously addictive and thrill seekers will reject the normal world for the wonders of an alternative existence.

Since, in all probability, such pleasures will be as expensive as they are accessible there can be little doubt that addicts will flip.

There can be no question of VR sneaking into the public consciousness without raising the queries and wrath of those keen to avoid social disaster areas.

CIRCUIT CITY



Every week Keith Pomfret explains a hardware project which will make your computer a more useful machine. This week he lays the groundwork for successful DIY with a null modem cable.

So, you've been planning that extra drive for your PC, null modem cable for your Amiga, memory upgrade for your aged Apricot or hi-res monitor for your Archie.

Circuit City will tackle simple plug-in upgrades, jobs that need a steady hand and a hot iron, and one-off projects of general interest. I've got some idea what you want to see built, fixed and fettled but the ideas should come from you, the readers.

Circuit City will take on any project as long as it is within the grasp of the average enthusiast and doesn't cost more than one arm and a leg.

Send your Circuit City suggestion on a postcard marked Circuit City Suggestions to the usual address. Suggestions on old bits of Kleenex or tatty manilla envelopes will be binned.

SMASHED TO BITS

Whether you get the urge to rip the entrails from your brand new Cray mainframe, add an optical disk drive to your ZX80, or just dip into the cauldron of boiling solder for a simple lead, you may need some help.

Before you take on any job, it's important to know whether it's within your capabilities, whether you have the right tools, what it will cost and whether it can do your machine or peripherals any harm.

Each *Circuit City* project will have a list of parts and tools and be graded in difficulty. The grading system is simple:

★ Means that your mum's friends from the Townswomen's Guild could do it. (Try to persuade them!).

★★ Is a project for a sensible bod with a steady hand.

★★★ Requires a bit of technical knowledge and a furrowed brow.

★★★★ Is wirehead territory. Read and enjoy, but don't attempt until you've got a degree in complicated twiddly things and a full set of Blue Peter badges.

Cost will be graded with stars too:

★ Is the sort of thing you could do out of bits and pieces of wire and old connectors and shouldn't cost you more than a fiver.

★★ £5-20. Not a project to break the bank but serious enough for a bit of effort.

★★★ £20-200. Serious cash outlay but worth it. A good investment means a good result.

★★★★ £200-plus. Dream projects that most of us can only aspire to.

To decide how many tools and what sort are required we'll use the following table:

★ A pair of pliers, a soldering iron, a couple of screwdrivers and a lump of solder, 1.5v battery, 1.5v bulb.

★★ All of the above, a solder pump, a magic hand, cutters, tweezers, mini-spanner.

★★★ The above plus magnifier, crimpers, strippers, solder tool kit, heat sink, mini vice.

★★★★ Everything in the other groups plus some nice expensive electronic gizmos like an AVO meter (Amps/Volts/Ohms), probes for the meter, an oscilloscope, gas powered portable soldering iron, Anglepoise lamp, general purpose amplifier, electric solder pump, CD player with Madonna's latest and a full set of all those tools that you can't think of a use for but will come in useful one day.

All but the simplest lead will require at least the two-star tool kit. There can never be a definitive list of what's needed but any job attempted in Circuit City will be accompanied with the star rating and, if necessary, a list of tools.

QUALITY IS IMPORTANT

Use the best quality and finest gauge solder that you can obtain, and always pick 'cored' solder that has a free-running flux in the cores. Cheap tools are a bad economy as they don't last. Spend the cash and always buy decent tools.

Some projects will be a simple matter of addition or replacement of parts, involving only a steady hand and a screwdriver, but even the simplest job can become more complicated if a machine chooses to have an unusual connector that needs replacing.

To ensure the success of any job that you undertake, use the right tools, follow the instructions and don't take short cuts. In the long term, short cuts cost money. ■

A FIRST PROJECT: NULL MODEM CABLE

PROJECT: Null modem cable
Difficulty: ★
Cost: ★
Tools: ★

One of the most common requests is for a cable to connect two computers together so that they can communicate with each other. The serial ports are connected together by a simple lead known as a null modem cable.

In a simple null modem, there are three wires connected to two connectors. They are:

TX-RX which is the transmit line of computer 1 to the receive line of computer 2.

RX-TX which is the receive line of computer 1 to the transmit line of computer 2.

Gnd-Gnd which is the ground (earth connection) of both machines.

Although the serial ports of different computers vary, the TX-RX, RX-TX, and GND-GND arrangement should provide a servicable null modem cable when applied to the appropriate connections of the machine's serial port.

The most common form of serial port is the 25 way D -connector and the most common implementation of this is wired so that:

Pin 2 = TX
Pin 3 = RX
Pin 7 = Gnd

Thus the connections would be 2 to 3, 3 to 2 and 7 to 7.

Before we start to make the lead though, it's important to make sure that all the parts are ready. Check that the connectors are the correct configuration for the machine's serial port and that the cable you are using has enough 'cores' to make the three circuits.

Plug in the soldering iron to allow it to warm up. A soldering iron is best left for a few minutes to allow it to get to its operating temperature. If your soldering iron has a replacable tip, be sure to use the finest (narrowest) tip for this kind of work.

Using pliers, wire strippers or other appropriate tools, remove the outer protective sheath of the cable, being careful not to damage the insulation of the internal cores.

The cores are generally colour coded so connecting them to the right pins isn't difficult.

Strip about 3mm of the insulation from the cores, being careful not to damage the strands of wire within.

Repeat the stripping operation with the cable sheath and internal cores on the other end of the cable. By now the soldering iron should be hot enough to do the job.and the process of tinning the wires can be attempted.

Tinning means coating the exposed ends of the cores with a thin layer of solder. This makes it easier to persuade the solder to join cable to connector. Practice on a spare bit of wire. You should aim to cover the exposed cable strands without leaving lumps or peaks of solder adhering to the cable.

Once you've become a dab-hand at this, do the same with your cable. Don't forget to do both ends.

You should have a cable with the sheath stripped from both ends and three bared cores neatly tinned protruding from each end.

Now for the fiddly bit. Line up one of the tinned ends with connection 2 on your connector. Touch them together, heat the join with your hot soldering iron, touch the iron with solder and allow a little of the solder to run onto the wire and connector.

This should now be a neat and tidy joint, but it isn't. It's probably all lumpy, or the connector's melted or it won't stick.

You may have to melt a few connectors, break a few leads and melt a few ounces of solder before you get it right, but with practice it will eventually look OK.

Once you're satisfied that you've got a reasonable joint, repeat the soldering process on the other two at that end of the cable. Remember to swap 2 and 3 over when you solder the other end. Your cable should be wired 2 to 3, 3 to 2 and 7 to 7.

Now that you've finished it doesn't look very much, but those three strands of electric string and pair of connectors will, with the appropriate software, allow you to communicate between a couple of computers.

It could be used for a simple file transfer, or even a dogfight using one of the flight sims that support two player two machine modes.

TECH TIPS

Does your PC keep packing up? Is your Amiga less than friendly? Would your ST try the patience of a saint? Write to Keith Pomfret's Tech Tips and we'll soon see you right. Send your sorry stories to Tech Tips, Beauford Place, 30 Monmouth Street, Bath BA1 2BW.

■ HELP! C64 PD

I am a C64 owner and having a lot of problems trying to find any PD houses for my computer. So is it possible for you to provide me with a list of them in your cool weekly mag.

I would be most grateful.

D Wesson, Malin Bridge, Sheffield

The people that can help you out are ICPUG (The Independent Commodore User Group). The person who you should chat with is ICPUG Software librarian David Miller, 38 Exeter Gdns, Ilford Essex IL1 3LB

HELP! import duty

I am thinking of buying a Mac IIcx with 4Mb of RAM, 40Mb hard disk and a multi-sync monitor, and 24-bit graphics board. I am getting it mail-order from the US, very cheap, at around £3,000. How much do you think delivery will cost? Also, will there be any taxes?

I am also thinking of buying an Archimedes, upgraded to 440/I spec and with multisync monitor. The software I intend to use is *Impression 2* and *Atelier*, or *Pro Artisan*. The Archimedes system would cost me about £2,100. My interests are DTP and graphics, and I can't decide between the two systems. I want a computer that is fast, reliable and quite powerful. Which would you suggest?

Abdul Aziz, Barking, Essex

If you buy mail-order from the US, you will have to pay import duty and VAT on the machine. This will come to about 20 per cent of the machine's value and thus take the price up to £3,600 minimum. If you want to get into DTP, the Mac is the machine for you. *Express* (and for that matter the other 10 mags produced here at Future) is produced exclusively on Macs using Quark *Xpress* (probably the world's best DTP program).

■ TIP! Pieces of eight

Have you got a parrot that you want to teach to talk? If so I have a trouble free method of teaching it. Sample the required phrase into your machine. Place the bird in the same room as your machine, then get the sample replayed in a loop, with a small

■ TIP Spectrum on-line

Comms on the Spectrum was never a simple art. When uncle Clive invented Spectrums (or Spectra for the classically educated) he neglected to give them the ports and interfaces that they needed to sneak down the phonelines and attack lesser and greater computers.

The Spectrum VTX5000 is an answer to the comms problem, going some way to getting Spectrum owners on line and, after a recent batch of letters concerning the trials, tribulations and pitfalls of doing this, we decided to go the whole hog and cover the subject in some depth.

Our expert for this journey was Neil Morgan and as well as being a fount of wisdom on the subject, can be apprehended via Aspects BBS.

If you are a Spectrum user thinking of starting out in the big wide world of comms then you need to be armed with a few facts.

Firstly you cannot just connect a modem to the back of a computer and expect it to work. You need a proper serial port/interface.

Some computers have serial ports built in but Spectrums don't. The Interface One most commonly associates with Microdrives has a serial port but, just like those built into the later versions of Spectrums, it operates mainly by software and has to be ready to receive a byte before it is sent. This works OK between computers, but modems unfortunately send each byte without checking if the receiver is ready first. This results in the loss of incoming data.

A proper serial interface is hard to find for the Spectrum. The only real one is built into the VTX5000. The VTX5000 is two items built into the same box. It consists of a proper serial port connected directly to a modem.

The VTX5000 is set up to operate at 1,200/75 full duplex (full two-way simultaneous communication) and 1,200/1,200 half duplex (one way at a time). For use on bulletin boards this means that you are limited to 1,200/75 which is also called V23.

The software built into the VTX5000 is only capable of handling view-data systems (like Prestel, Gnome at Home etc).

Many bulletin boards and on-line services use scrolling software. This used to be available on the Gnome at Home: 081--888 8894, which is a viewdata board, and on Prestel.

The Gnome lost a good deal of software in a system crash and cannot currently be sourced for Spectrum scrolling software. Watch this space!

Prestel has the obvious drawback that you have to subscribe before you can get at the software.

It really is worth getting the software and having a look at scrolling boards, but there we have the chicken and egg problem. The software is there for the taking on the scrolling boards, but you need the software before you can download it.

The simplest answer is to get your pen, paper and envelope out and get the software by post. It is public domain i.e. free, but it will cost postage and the magnetic media. The programs you need are :

- ***Firescroll* - scrolling software for any Spectrum modem.**
- **The downloading program (instead of CET), or if you have it the Plus 3 and CP/M ZMP.**
- **Good CPM software, but make sure you get the Spectrum Plus 3 version.**
- ***MEX*, *MEXV* or *MEXD* - again make sure that you get a version suitable for the Spectrum Plus 3**

The Spectrum Plus 3 and Plus 2a also have a slight technical problem in that Amstrad altered the connections on the edge connector. You will need a modified edge card (the one that comes with the VTX5000), which you can either make for yourself or get from a supplier. Brian Gaff, editor of the Micronet Spectrum area is the chap to supply this.

Don't just take our word for it though. Log on and try some of these wonderful comms. Here are a couple of numbers to whet your appetite:

***Aspects*: 061-792 0260, sysop Dave Gorski**

***Fourth Dimension*: 0202 600305, sysop Wayne Weedon - good Spectrum and QL board.**

When you gain experience with modems you may feel you want to get better equipment which will run at higher speeds. There is an information file on a few boards, including Aspects, about modifying the VTX5000 to work with 'proper' modems. This entails ripping out the modem half of the innards and slightly modifying the serial board. This is perfectly legal as your new modem, not the VTX, will be attached to the telephone line. The serial board is capable of speeds up to 2,400 baud but I have not tried this speed yet.

If you are offered a VTX711 serial interface on its own, then leave it well alone. The Voyager modem that it is associated with is quite an adequate little box but it is still limited to 1,200/75, 75/1200 and 300/300.

There are no Micron boards operating at the moment. These were Spectrum/VTX5000 systems which ran at 1,200/1,200 half duplex and were very cheap to set up, though not very fast or reliable. If you own a Spectrum Plus 3 then get CP/M. When you do you will find the amount of free software available will dramatically increase. For example I am writing this using *VDE* - a PD word processor. I will package it using *CRR* - the offline message reader and I will upload it to my local board using *MEXD*, which is the scrolling software package. I will compress the file so that it doesn't take as long to send, thus keeping my bill down, using a public domain archiver. All these costing only the price of a local phone call, except for a basic version of *MEX* via the post which I needed to break the chicken/egg circle.

Neil Morgan's definitive guide to Spectrum on-line was typed on his Spectrum and uploaded to Aspects BBS. It was downloaded directly to *Express*'s hardware, and squirted into the mag in minutes.

gap in between each repetition. It worked for me or rather my parrot, and if required I am sure the same method will work with young children. (He he he)
Dave Pettitt, Oxford

It worked with Kylie, Jason and Madonna, so why not indeed?

■ HELP! I need a machine

I am looking for a Phillips 8280 computer, to use at school for a video making course, and was wondering if you knew of anyone who was willing to sell such a machine, for a good price.

I will keep on trying the ads in *Express.* And if anybody out there can help, my number is:

Witheld to stop you getting all the jerks in the world ringing you. Any Tech Tipper out there wanting to dispose of the 8280, write to the usual address and we'll pass the message on.

■ HELP! Apricot jam

I am a proud owner of an Apricot Portable, bought in 1985. It has a 3.5-inch 720K floppy drive and 256K on-board RAM. It has a 25-way female serial port, a centronix port, and a seven-way male monitor port.

On the motherboard there is space to solder another 256K of RAM, is this easy to do if I bought the ICs?

There is a white 32-way connector on the motherboard for expansion boards. Is this the only way to add a hard disk, or could I use the serial port?

I would also like to add a mono or colour monitor. Must I buy an Apricot monitor or will any IBM-compatible monitor do?

When I boot the the PC it comes up saying Apricot 2.11 BIOS. Is there anyway of changing this for IBM BIOS as I have problems reading disks written on an IBM 720K drive?
Bryan Murdoch London E17

Don't attempt to solder RAM chips on to the motherboard unless you are either very good at fine soldering or don't mind if your machine turns up its toes.

The only way that I know to connect a hard drive is via the internal expansion.

Apricot colour monitors are the best bet for this computer and with colour models changing hands for £20-30 at the auctions it's a frugal as well as a compatible solution.

The BIOS can be changed by replacing the EPROMS (2x27128) with the last set produced which can read from and write to an IBM disk. The only problem with this is that you may experience some software incompatibility.

■ HELP! Beefing up the weedy sound of an F-111

I toyed with the idea of an ST, Amiga, SAM or Arch because of their superior graphics, sound and games software but as I had to justify the purchase to my employer, we ended up with a 386 VGA machine with a 65Mb hard drive and 4Mb of memory. I work from home and was surprised to find that some of the games that the kids brought home and played on the computer had graphics and gameplay to at least the standard of the Amiga. Fine we thought. F18 fighers roared off the runway with all the speed and graphic aplomb of the real thing, only to be let down by the PC bubble-and-squeak sound. A friend showed me the same game running on his PC with an Ad-Lib synthesiser card and the difference was amazing. Stereophonic after-burners as the plane roared off into the blue yonder.

I want to buy the Ad-Lib card but my friend said there isn't much software available that will use it. Other than the *Jukebox* and pop-up sound programs, what will run on the Ad-Lib card?
Maureen Ballock, Sheffield, S Yorks

Here's the list of games that we know will recognise and use the sound card. Some of them are only out in the States so you might have to hunt around.

The list is being added to all the time; PC games which use the board are not usually slow to advertise the fact, however.

Accolade: *Altered Destiny, The Cyles: International Grand Prix Racing, Day of the Viper, Don't Go Alone, Hardball II, Jack Nicklaus Presents the Major Championship Courses of 1990, Jack Nicklaus' Unlimited Golf and Course Design, Les Maley In: Search for The King, Star Control, Sratego, Strike Aces: International Bombing Competition*
Activision (Mediagenic): *Death Track, F-14 Tomcat* (October 1990), *Ghostbusters II, The Manhole, Mech Warrior, Power Drift, Tongue of the FatMan*
Broderbund: *Prince of Persia, Where in Time is Carmen Sangiego, Where in the USA is Carmen Sandiego, Where in the World is Carmen Sandiego, Wolfpack*
California Dreams:*Tunnels of Armageddon*
CapStone (Intracorp): *Bill & Ted's Excellent Adventure, Cardinal of the Kremlin, FutureSport, Miami Vice*
Cinemaware: *Dragon Lord, It came from the Desert, Loras of the Rising Sun* (October 1990), *Tusports: Basketball* (October 1990)
Data East: *Bo Jackson Baseball, Drakkhen, The Dream Team* (Autumn 1990)
Dynamix (Sierra): *A-10 Tank Killer , David Wolf: Secret Agent, Heart of China* (Autumn 1990), *Red Baron* (Autumn 1990), *Rise of the Dragon* (Autumn 1990), *Stellar 7* (Autumn 1990)
Electronic Arts: *Budokan: The Martial Spirit, Centurion: Defender of Rome, Gorbachev Ace* (Autumn 1990), *Indianapolis 500: The Simulation, Lakers versus Celtics and the NBA Playoffs, LHX Attack Chopper, Low Blow, Keef the Thief, Kings of the Beach, Play of the Day* (Autumn 1990), *PGA Tour Golf, Populous, Ski or Die, 688 Attack Sub*
Electronic Zoo: *Black Gold, Spherical, Tennis Cup, Treasure Trap, Xiphos* (Autumn 1990)
Epyx: *Omnicron Conspiracy*
Gamestar (Mediagenic): *Face Off!, Take Down*
Infocom (Mediagenic): *Circuit's Edge*
InnerPrise: *Final Orbit, Lost Dutchman Mine*
Konami/Ultra: *Castlevania, Teenage Mutant Ninja Turtles*
Kyodai, *Murder Club, Psychic Wars*
Lucasfilm Games: *Their Finest Hour: The Battle of Britain, Indiana Jones and the Last Crusade: The Graphic Adventure, Loom*
MicroIllusions: *Questmaster I: The Prism of Heutotol*
MicroPlay, *Command H.Q., Mega Traveller II* (October 1990), *Mid-Winter, Universal Military Simulator, Weird Dreams*
MicroProse, *Lightspeed* (September 1990), *Knights of the Sky* (October 1990), *Red Storm Rising, Sid Meier's Railroad Tycoon, Silent Service II, Sword of the Samurai, F-15 Strike Eagle II, F-19 Tank Platoon*
Mindcraft Software, *Keys to Maramon, Magic Candle II* (October 1990)
Mindscape (Software Toolworks), *Clubhouse Sports, Fiendish Freddy's Big Top O'Fun*
Omnitrend Software, *Breach 2, Rules of Engagement, Universe 3*
Origin Systems, *Bad Blood, Times of Lore, Ultima VI, Windwalker*
Paragon Software, *The Punisher, Spider Man & Captain America in Dr. Doom's Revenge, Mega Traveller I: Zhodani Conspiracy, X-Men:Madness in Murder World, X-Men II* (October 1990)
Share Data , *Avoid the Noid*
Sierra, *Code Name Iceman, The Colonel's Bequest, The Conquest of Camelot, Hero's Quest, Hoyle's Book of Games, Hoyle's Book of Games II, Keeping up with the Jones, King's Quest IV, Leisure Suit Larry II, Lesiure Suit Larry III, Oil's Well, Police Quest 2, Silpheed, Sorcerian, Space Quest III*
Software Toolworks: *Life and Death II* (September 1990)
Spectrum/Holobyte: *Faces*
Strategic Simulations: *Champions of Krynn, DragonStrike, Secret of the Silver Blades*
SubLogic: *Air Transport Pilot*
Taito, *Arkanoid II: The Revenge of Doh, Bubble Bobble, Castle Master, Day of the Pharaoh, Kiwi Kraze, Operation Thunderbolt, Puzznic, QIX, Rastan, Renegade, Sky Shark, Rambo III, Where Time Stood Still*
Three-Sixty Pacific: *Harpoon, Sands Of Fire*
Titus: *Dark Century, Fire and Forget 2 , Wild Streets*
Virgin Mastertronic: *Spirit of Excalibur, Spot, Wonderland*

■ TIP! PC Engine driver

In reply to P Clarbull's letter in *Express* 94 I would like to correct him on the point of PC engines - it is not vital to have a TV booster on the back as the engine will not overheat.

In Hong Kong, there have been three types of engines The original had no TV booster, the TV/computer lead was simply plugged into the side of the Engine, and it had really bad pictures The second one that came out (the one I bought and, I suspect, P Clarbull) has a TV booster with it, which it will not work without, and a much better picture. The third one does not come with a TV booster and the pictures come out of the side of the Engine, though it is possible to plug a TV booster into the back and get a picture. Thus this Engine can output two pictures.

Anyone out there looking for Engines would therefore be advised to look for a second hand one from Hong Kong. Hong Kong uses PAL and the Engines made there also run on PAL. The only snag is there is no guarantee, but Engines are quite hard to damage.

The thing about HK Engines is their better playability. On normal Engines there should be a switch on the side which allows you to select the size/speed of the game. On imported Engines this switch is not there, instead there is simply a peice of metal.

On a big TV, you will notice an inch missing from the top and bottom, and sometimes gameplay is much slower.

So basically grey imported Engines give a slower game. The difference can easily be spotted by someone like me who has a 'fast' Engine. If you wanted slow games you could have got an Amiga instead.

Basically there are four different ways of telling the difference between a grey imported one and a HK one:

(1) The adapter is not standard, it should have two pins as HK and Japan use different voltages. The adapter should have the word 'Nisutomo' on it.

(2) It should have Japanese instructions and a mysterious little dongle, roughly half the size of a match box.

(3) The screws on the underside of the engine should be a special type thet you can't open with a normal screwdriver.

(4) There will be no guarantee on it.
N Lee, Risborough, Bucks.

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This is Cursive fount

ST
PCs
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FINE	4	5	6	7
BAMBOO	8	9	10	11
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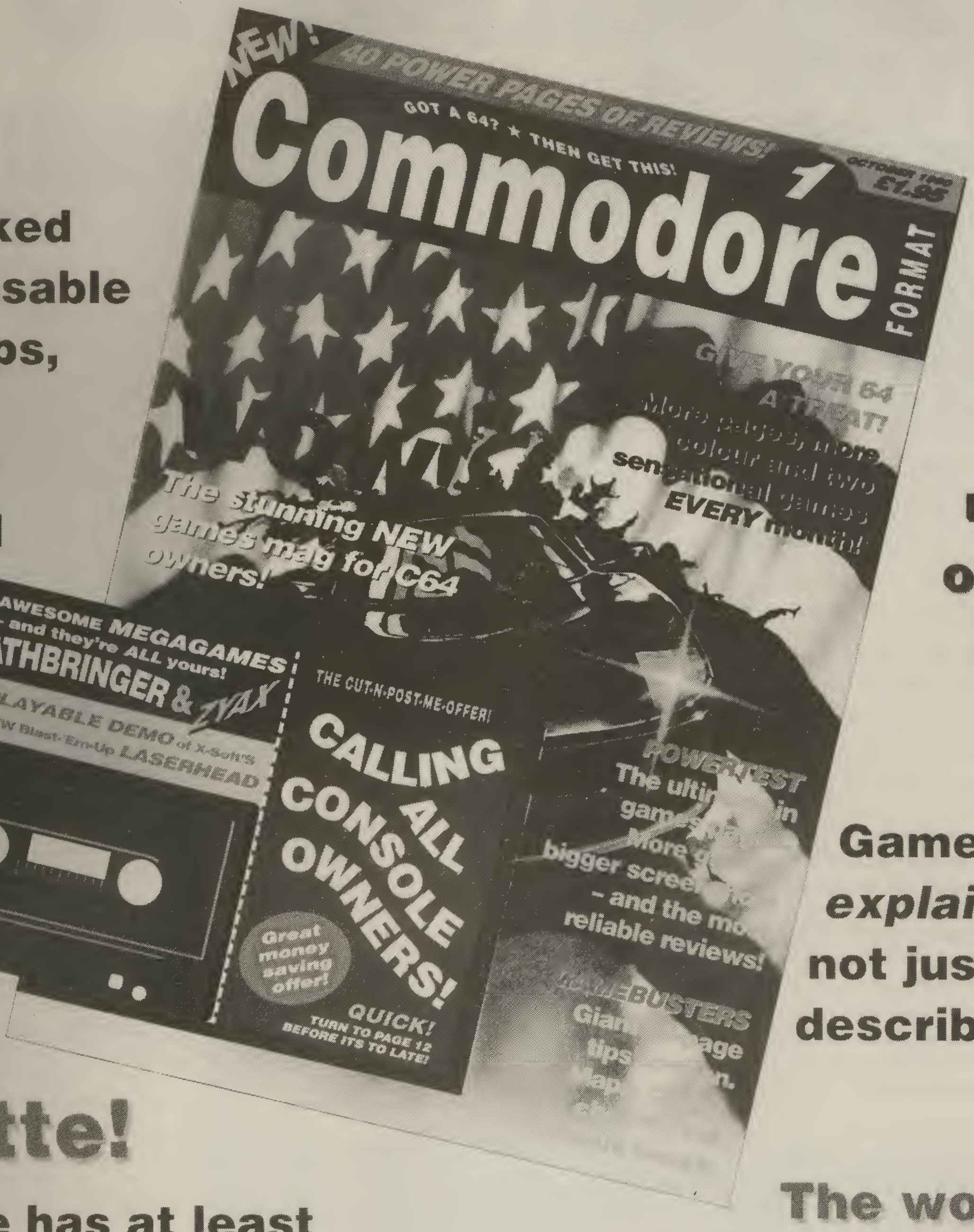
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FIRST ISSUE ON SALE SEPT 20th * TELL THE WORLD THE GOOD NEWS!

RATING THE

• Sound Trap for the Amiga: cheap but no poor cousin.

Sampling – the recording of sounds using a computer – has revolutionised the record industry, and you can get a taste of the action with an add on cartridge for the ST or Amiga. Ian Wrigley looks at some of the devices on offer...

Samplers are used throughout the music industry these days – there is unlikely to be a record in the charts this week without some sampled sounds in it.

Not all sampling is as easy to spot as Paul Hardcastle's famous 'N-n-n-n-nineteen': many record producers use sampling in a much more subtle way. For example, if a lead singer can't quite reach a high note, his voice will be sampled in and then replayed at the right pitch – without the listener being able to tell the difference (until they go to see the group perform live, of course).

The beauty of the sampler, compared to a tape recorder, is that a sampler allows you to alter the way the sound will be replayed: for instance, you can reverse the sound, fade it up and down, combine two sounds, change the frequency (pitch)... the list of possibilities is endless, limited only, to coin a phrase, by your imagination.

The best bit of all is that this is all possible on your computer. The advent of cheap, powerful machines like the Amiga and ST has meant that amateur musicians no longer have to sigh with envy at those who can afford to splash out the £250,000 or so which a Fairlight with direct to disk recording costs. Now, often for less than £100, you can do very similar things on your home computer.

Here we list just some of the products available for the Commodore Amiga and Atari ST, but there is bound to be a package available for your computer, whatever it may be.

SOUND TRAP III – AMIGA

Although only costing £37.50, Sound Trap III from Omega Projects is certainly no poor relation to the more expensive devices.

The sampling hardware resides in a tiny box which plugs into the parallel port of any Amiga – including the A1000. This is because the unit has both a male and a female connector – the unused connector allows you to daisy-chain another device to the parallel port, so you don't have to keep unplugging Sound Trap.

Sound input is via a single jack connector – Sound Trap is a mono-only sampler. Samples can be grabbed at a variable rate from 6kHz up to a claimed 34kHz, although the hardware seems to limit the highest rate to a slightly lower 29kHz.

The software is totally icon-driven, and includes all the standard functions – Record, Play, Zoom (in or out), Copy, Paste and so on. Unfortunately, that's as far as the software goes – if you want advanced features such as fades and echoes, you'll have to invest either in extra software (such as Aegis' AudioMaster II, from HB Marketing on 0895 444433, which is a package which works with most sampling hardware, including Sound Trap) or a conventional effects unit.

Sound Trap III is available from Bytes and Pieces on 0253 734218.

MASTER SOUND – AMIGA & ST

Master Sound is a £39.95 offering from Microdeal. The hardware comes in a large, cream coloured box which comfortably slots into the parallel port of your machine. At the other end of the box is a single 3.5mm jack, which is used to connect the device to whatever sound source your little heart desires.

The software is a revelation after the somewhat minimalist Sound Trap package. The sound grabber and editor offers all the usual functions, and editing is pretty standard. However, the software also has extra functions not normally found on the cheaper samplers. You can, for example, overlay (mix) one sample with another, filter a sample, fade it in and out and compress it. Files can be stored in either raw data or IFF formats. But the power of the software doesn't stop there: the other component is a built-in sequencer. While this is not the first sampler to include a sequencer in the package, it is way ahead of the other offerings available. It works by turning your keyboard into a musical keyboard; up to 18 samples can be stored in memory, and are accessed by allocating them to keys on the numeric keypad.

The sequencer emulates a four-track tape recorder – to record onto one of the tracks, just select 'RECORD' and start playing. Multiple instruments can be laid down on a single track using the overdub feature, and your music can be edited to remove any glitches in your playing. Microdeal even provides a sequencer player program so that you can give other people copies of your masterpiece.

The sound quality of Master Sound is excellent – sample rates vary from 3kHz to a very impressive 55.9kHz, and even at the lower rates the samples remain bright and lively. The package costs £39.95 and is available from Microdeal on 0726 68020.

WHAT IS SAMPLING?

At its simplest, sampling can be thought of as recording a sound into a computer. The computer can then be used to play the sound back – in a similar way to using a tape recorder.

That, however, is a very simplistic concept, and to get the best out of a sampling package you need to know a little more. The sampler takes an instantaneous 'sample' of a sound, and converts that analogue signal into digital information by analysing what frequencies the sound is made up of, and how loud each of those frequencies is. It then stores that information and takes another instantaneous sample.

This sampling clearly has to take place very quickly – the faster the sample rate, the better the sound quality. Compact discs, which are recorded in a similar way, contain the sound sampled at 41,500 samples per second – known as 41.5 kiloHertz, or kHz. It is not necessary to sample this fast to get reasonable sounding output, however – a sample rate of around 30kHz is perfectly adequate, and good results have been obtained at much lower rates than that.

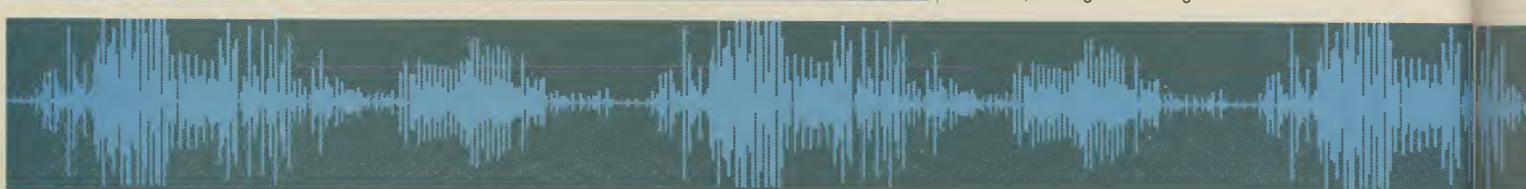
Also crucial to the quality of the sample is the number of bits it uses. The more bits the more accurate the definition of the sampled sound.

All the samplers listed here record at 8-bit resolution; for comparison Compact Disc is a 16-bit system.

AMAS – AMIGA

Microdeal's Advanced Midi Amiga Sampler is of a different design to most of the other models, in that it is connected to the Amiga by cables, rather than by plugging directly into the computer. This is because it's not only a sampler but also functions as a MIDI interface, so it needs to plug into both the serial and parallel ports. Apart from that, the box has the standard two phono sockets for the sound input, and three MIDI connectors – in, out and thru.

The software allows the sampling of up to eight banks of ten stereo samples each (or, of course, 20 mono samples) and each bank uses up 200K of memory. Samples can be saved in either raw data or IFF format. All the sample edit facilities you could want are available, although the editing method is not as intuitive



E TOP SAMPLERS

INPUT
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MASTER
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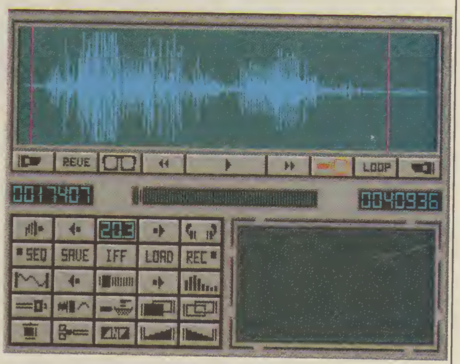


• *Master Sound comes with some excellent software which allows you to mix samples together on the screen. A sequencer is included so thet simple tunes can be put together easily, and a compression option allows you to make the most of your memory.*

and easy to use as on some of the other packages. There is also a 'shrink' option, which compresses the size of the data quite well, without too much loss of audio quality.

And, of course, you have a MIDI interface in the same box. With the same software, you can link instruments up to play your samples from a proper musical keyboard. The interface can also be used by any other MIDI software.

If you need both a sampler and a MIDI interface, this could be the package for you. It costs £99.95, and is available from Microdeal on 0726 68020.

IS DIGITISER – ST

The IS Digitiser, from Innovated Software, costs £69.95. It slots into the cartridge port of your ST and offers phono sockets for audio in and out. Sampling rates range from 1kHz to 32kHz, plus a 48kHz rate which cannot be played through the ST's speaker but must be output through the cartridge.

The software provides extensive filtering facilities for the incoming audio signal (filtering removes certain frequencies, which can help to enhance the signal quality). Once in, the sample can be edited with the usual functions like reverse, cut and paste. The software also allows the addition of filters such as echo and reverb. You can also listen to the sounds without storing them in memory – in other words you can feed sounds in and instantly replay them, allowing you to select the optimum sample rate without having to store and replay every time.

Also on the disk are source listings in C, 68000 assembler and various dialects of BASIC for replaying your sampled sounds in your own programs, although sadly you cannot do this as a background task.

With impressive software and a good manual, the IS Digitiser is certainly worth consideration. It can be purchased from Chips Computers on 0903 700804.

AUDIO IN
AUDIO OUT
IS
DIGITISER

• *The IS Digitiser: the software has enhancement facilities.*

PRO SOUND DESIGNER – AMIGA AND ST

Eidersoft's attempt to crack the sampling market retails at £39 for the Amiga, £49 for the ST. The package is similar on both machines, although the Amiga version is slightly more powerful.

Pro Sound Designer's sampling rate can be varied from 1kHz to 28kHz. The software has a 'monitor' mode so that you can hear the results of any given sample rate played straight back to you. You can sample in stereo, but if you want to do so your sample rate is restricted to a maximum of 17kHz. Samples can be stored on disk in IFF format for the Amiga, while the ST version supplies source files in BASIC, C and 68000 assembler for including samples in your own programs.

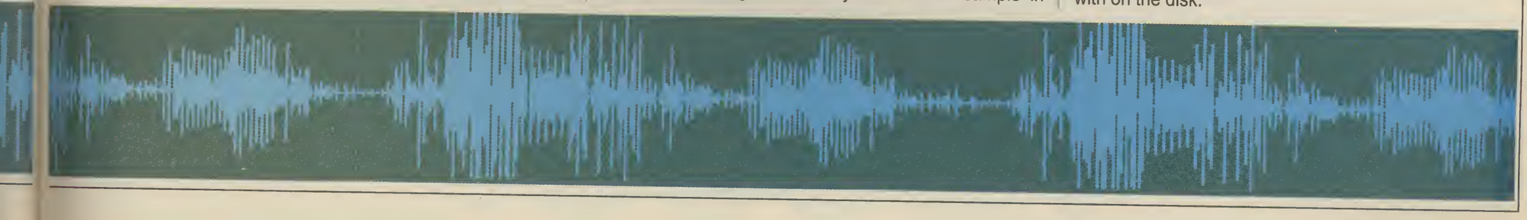
The Amiga version of the package allows up to four samples to be played at the same time, while the ST can only play one at once. Sample editing is simple task – just define the section of the sample which you want to work on and you can then cut, paste, reverse and so on as normal.

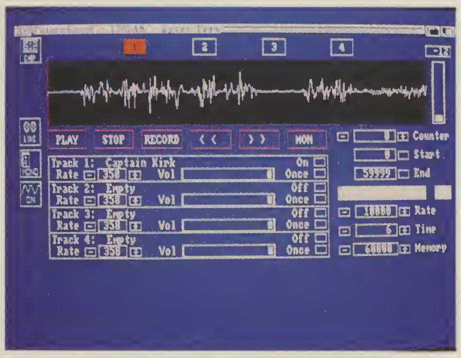
Pro Sound Designer is available from Power Computing on 0234 273000.

REPLAY PROFESSIONAL – ST

Replay Professional, from Microdeal, will cost you £129.95. Although you can sample only in 8 bits (as with all the other samplers we've looked at), the software will allow you to play back any recorded sample at 12 bits, for extra accuracy. The hardware plugs into the ST's cartridge port, and has two phono sockets – one for sound input, the other for output through an external amplifier and speakers; samples output this way sound much better than when just played through the ST's internal speaker.

The software comes on three disks, and comprises *Replay Professional*, the sample editor, *MIDIPlay Professional,* for replaying samples through a MIDI keyboard, and *Drumbeat Professional,* a software drum machine. There are also loads of demo sounds to play with on the disk.





Track 1: Captain Kirk Rate 358 Vol On Once
Track 2: Empty Rate 358 Vol Off Once
Track 3: Empty Rate 358 Vol Off Once
Track 4: Empty Rate 358 Vol Off Once
Counter 0
Start 0
End 59999
Rate 10000
Time 6
Memory 60000

• *Futuresound 500: limited software.*

The software allows you to sample at eight different preset rates, ranging from 5.5kHz to 48kHz, although the top two rates (44kHz and 48kHz) can only be played back through the cartridge, not through the ST's speaker. Free memory of 230K on a 520 gives you around 17 seconds of sampling time at a frequency of 11kHz, while the 1040 leaves you 750K free in which to store your samples.

The method of editing samples is the common one – two cursors, with which you surround the section of sample you want to edit. The editing facilities are good, and offer features like reducing and increasing the volume level, fading in and out, reversing a section of the sample,adding effects like echo and reverb and overlaying two or more different samples.

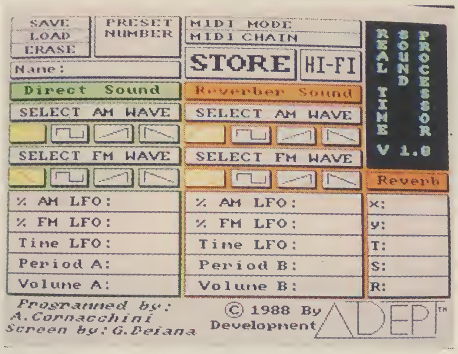
Once you have edited your sample, you can load it into *Drumbeat Professional* – any 15 samples can be used by *Drumbeat,* which will then play up to four at a time through the cartridge, although sadly not through the ST's speaker. You can also use *MIDIPlay Professional* to replay your samples using a standard MIDI keyboard.

Although more expensive than much of the competition, the hardware and software combine to make Replay Professional the best sampler available for the ST. It costs £129.95, and is available from Microdeal on 0726 68020.

THE REST

No list of ST and Amiga sound samplers can ever be comprehensive; there are so many and they change so fast. Worth looking out for is Futresound 500 from Applied Visions of Watford, although the software that comes with it is rather primitive, some say it produces the best quality sound samples for the Amiga. It can be had for £80.

Another Amiga sampler is the Real Time Sound Processor. As its name suggests, this £70 package (from HB Marketing on 0753 686000) offers some sophisticated sound editing tools such as reverb, delay, flange and echo.



Name:
% AM LFO:
% FM LFO:
Time LFO:
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Period B:
Volume B:
x:
y:
T:
S:
R:
Programmed by: A.Cornacchini
Screen by: G.Deiana
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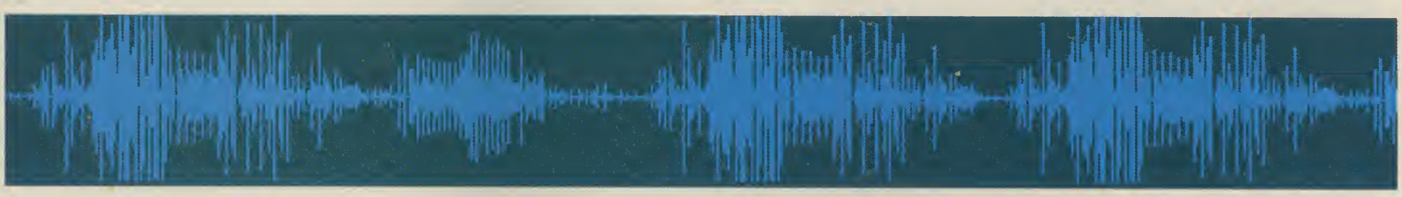
• *Real Time Sound Processor: interesting options.*

Or you could try Pro Sampler Studio II from Datel (£79.99, 0782 744707) which offers stereo sampling and a wave form editor. It also allows Amiga owners with a megabyte of memory to store several samples in memory at once.

There are always new samplers coming along – for instance the stereo Sound Express (£39.99 from Harlequin Distribution on 0908 560040) arrived only yesterday, so we couldn't test it in time for this article. Look out for a full review soon.

The quality of sound samplers is ever increasing and there are some excellent products on the market – happy digitising! ■



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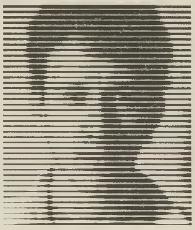
Mark Higham's GAMES WEEK



Eager to find out all the latest games news as soon as it happens? Every week we bring you all the latest gossip and tips from the games front.

You may have noticed a few changes in your favourite weekly. By far the brightest and best of these is the introduction of a new page devoted exclusively to games *(Funny you should say thet – Ed)*. Each week I'll be finding out which games are poised for release, the titles you should be spending your money on and tips on how to make the most of your games when you get them home. From now on if you're a gamester you can't afford to miss this crucial diet of news, previews, reviews and tips.

ENCORE

To get the page off on a high note, I've got news of the Bullfrog's next big game, destined to do at least as well as *Populous*. With a programming team like the Bullfrogs behind it, *Powermonger* certainly has an impressive CV but that guarantees nothing. Coming up with a best-selling game on the scale of *Populous* is a once-in-a-lifetime opportunity so can they possibly hope to repeat their success? Judging by the demo I saw at their offices recently, the answer seems to be a resounding yes.

Like *Populous, Powermonger* is played on a non-standard playing screen surrounded by control icons. But this is where any similarity ends. The idea is that you play the role of a king deposed and booted out of your kingdom. Stuck on an island, you try to become king again by taking over more and more land and the people on the island. There are three other kings also stealing land and the key to success is to take central territories. As you pick up people, you start to put them to work for you. You can set them developing weapons so that if you come under attack from the other kings you have the necessary hardware to defeat them. Weather conditions such as snow, rain and fog affect the speed at which your people can develop their weaponry and you need to keep them supplied with food if they're going to keep on working for you.

The latest news is that *Powermonger*'s release has been delayed until October. More than enough time to save your cash.

FOLLOW-UPS GO ON AND ON

If the first question you ask when you hear about *Powermonger* is "where are the laser canons and aliens?" then you're probably a fan of arcade-style action games. We've seen a decline in quality shoot-'em-ups since last year as the big boys like Ocean and US Gold have struggled to come up with original variations on hackneyed themes. What they don't realise is that some of us still shit ourselves when faced by an awesome end-of-level guardian.

US Gold is finally satisfying that need by coming up with a follow-up to its superb *Strider* game released last year.

The original game placed you in control of a sword-bearing acrobat who danced around levels hacking up the villains like a meat slicer. Animation was excellent and it played like a dream.

Tiertex are the programming team behind the new *Strider 2*. You may remember them for their conversion of the *Thunderblade* arcade game which, with excellent animation but appalling gameplay, was one of the all-time big turkeys. Their tattered reputation was restored when they worked on the original *Strider* game so we're guaranteed that the follow-up will be at least as good.

It all sounds fun but has *Strider 2* come too late? My trigger finger seized up months ago through non-use and it could take a long haul of physiotherapy to get it working again.

SURE THEY CAN

After making heaps of dosh with Amiga, CPC, Commodore 64 and Spectrum versions of *Turrican,* Rainbow Arts has announced that it's making a U-turn on its decision not to produce an ST version. Originally, the German-based programming team declared that an ST version would be impossible to program yet now it's on the menu for an end-of-September release. ST demos are already circulating. I, for one, am looking forward to whipping out my laser cannons and charging blindly into uncharted territory. ▨

PLAYING TIPS

RAINBOW ISLANDS • Ocean

There's no cheat password to this one so you have to rely on tips if you're going to complete the game.

If you collect the seven crystals – red, orange, yellow, green, blue, indigo and violet – you gain an extra life. The seasoned player should be able to collect the crystals in order, in which case a silver door appears when you reach the end of level monster. Go through the door to collect loads of goodies.

Every third creature you kill a special item appears for you to collect. Trainers enable you to run faster; the red pot gives you an extra rainbow (up to a maximum of three); the yellow pot increases the speed of your rainbows.

Other items make the game easier to play. Rings make you shoot out explosive stars when you jump up. Thunder gives you a cup which kills everything on screen. A clock stops the creatures moving for a few seconds. Magic wands make your rainbows turn into apples, cherries, peaches or chocolate which protects you from the creatures.

THE TOP TEN

1	1	Shadow Warriors	Ocean	Sp	Co	Am	ST	Ag
2	2	Turrican	Rainbow Arts	Sp	Co	Am		Ag
3	3	Kick Off 2	Anco		Co		ST	Ag
4	NE	Shadow of Beast II	Psygnosis					Ag
5	5	Chase HQ	Ocean	Sp	Co	Am	ST	Ag
6	4	Manchester United	Krysalis	Sp	Co	Am	ST	Ag
7	8	Robocop	Ocean	Sp	Co	Am	ST	Ag
8	10	Batman The Movie	Ocean	Sp	Co	Am	ST	Ag
9	RE	Shadow of the Beast	Psygnosis					Ag
10	9	Rainbow Islands	Ocean	Sp	Co	Am	ST	Ag

Formats: Sp=Spectrum ST=Atari ST Co=Commodore 64 Ag=Commodore Amiga Am=Amstrad Chart compiled by Gallup. © European Leisure Software Publishers Association.

MANIX

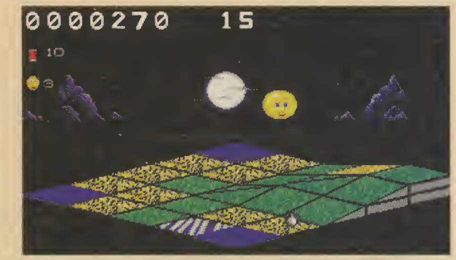
MILLENNIUM • £24.99

We've been inundated with cutesy games from almost every software publisher since Ocean whipped up a conversion of *Rainbow Islands* back in May. This latest one from the Millennium stable may seem like overkill but it has all the ingredients of an addictive game. *Manix* is due for release on the ST and Amiga next week with 8-bit conversions a possibility next year.

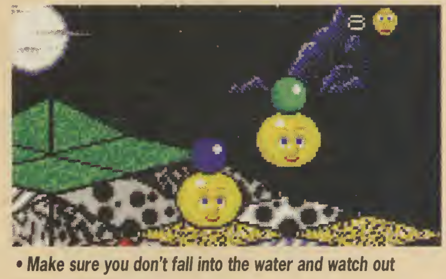
The hero of *Manix* is a bright yellow ball who bounces continuously on a patchwork landscape of patterned tiles. At the start of the game bombs fall from the sky and change the appearance of the chequered landscape. It's your job to change tiles back again by bouncing on them. Each time you bounce, the pattern of the square cycles through a series until the original colour comes up.

Upsetting your progress is a host of other obstacles from wacky ninja balls to lethal spikes. The ninja balls bounce along behind you, changing the pattern of the tiles until they eventually tumble into the water and leave you to get on with the arduous task of changing them all back again. Bonus coins build up your score and potion bottles give you extra lives.

***Manix* has some comic attractions in the graphics department. For example, the yellow ball wears L-plates and the ninjas grimace menacingly. Sound comprises simple tunes which play throughout the game. They regularly change so your eardrums don't get too offended by the noise. When you start to play *Manix*, the hours just whistle past as one game rolls into another.**



• Get bouncing and change those squares back to their original colour before the bombs reappear.



• Make sure you don't fall into the water and watch out for falling bonuses.

With each game you swear to do better next time. The only trouble is, next time comes round again and again and again. If you're looking for a game you can really get involved in you won't find it here, but as a relaxing way to fill the hours, there's little to touch it.

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The new Portfolio from Atari is the world's first pocket-sized electronic organiser that is also a powerful PC compatible computer, with a full QWERTY keyboard and scrolling 80×25 character display.

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Portfolio also includes several functions that you would not expect - a spreadsheet for your personal budget and expense records, as well as a text processor for typing memos and letters.

And, because Atari's Portfolio is PC compatible, it can communicate with your desktop PC at home, or in the office. You can transfer files from one to the other, to enable you to update your reports and figures with the Portfolio while you are on the move.

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SPECIFICATION

- ★ ***Processor:*** Intel 80C88 at 4.9152Mhz.
- ★ ***Operating System:*** Compatible with MS-DOS 2.11.
- ★ ***Internal ROM:*** 256K containing BIOS, operating system and applications suite.
- ★ ***RAM:*** 128K with an internal RAM disk, configurable from 8K. Externally expandable to 640K RAM.
- ★ ***Keyboard:*** 63 keys, QWERTY, IBM PC BIOS compatible. Buried numeric pad and function keys. Optional key click.
- ★ ***Character Set:*** Extended IBM ASCII (255 characters).
- ★ ***Mass storage:*** credit card sized memory cards (32K or 64K or 128K RAM).
- ★ ***Display:*** Graphics LCD, supertwist technology, MDA compatible, 40 columns x 8 lines, 240 x 64 pixels (with the option to window a full 80 x 25 character display). Keyboard controlled contrast.
- ★ ***Peripherals:*** 60 pin expansion BUS to take serial and parallel ports and memory expansion units.
- ★ ***Size:*** 8" x 4" x 1" (200mm x 105mm x 29mm).
- ★ ***Weight:*** 495 grammes (with batteries).
- ★ ***Applications:*** calendar and diary, address and phone book, Lotus 1-2-3 compatible spreadsheet, text processor, communications software.

COMING SOON!

In addition to the excellent software built-in to the Portfolio Free of Charge (see right), other software and peripheral products, such as the sophisticated Pocket Finance package and serial/centronics interfaces are available. And it doesn't stop there. Many manufacturers have recognised the potential of the Portfolio and have already started to design new peripherals and software. Products currently under development include: Serial interface with built in mini modem, Apple Macintosh interface, business, utility and programming software plus a range of adventure and battle strategy games. For further free details on the Portfolio range, fill in the coupon below and return it to Silica Systems now.

5 BUILT-IN APPLICATIONS TO GET YOU ORGANISED!

To get you started, Portfolio comes with a suite of five useful functions built-in, all accessible from a simple menu display.

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More than just an electronic diary, the Portfolio Time Manager enables you to plan your appointments via a comprehensive calendar and diary. It can even be programmed to sound an audible alarm at specific times to remind you of important appointments.

CALCULATOR

Your Portfolio will be invaluable in the office or at home as a powerful pocket calculator. It has a full range of functions, including factorial, power and root calculations, all with multi display formats and memories.

ADDRESS BOOK & DIALLER

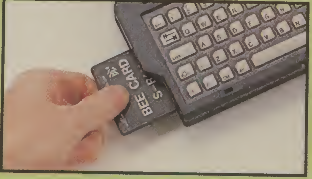
Portfolio has a complete address book facility that allows you to store hundreds of addresses and phone numbers. And, at the touch of a button, you can retrieve any one of them, or search for a specific grouping, such as "all Italian restaurants". And, when you are ready to book your table, hold your Portfolio to your telephone mouthpiece and use its special built-in tone dialler to dial the number for you.

TEXT PROCESSOR

The Portfolio's built-in text processor program includes word wrap, line and column count, string search, in fact most of the functions you would find in a word processor. It handles printer and word processor control codes and allows easy transfer of files between Portfolio and your desktop PC.

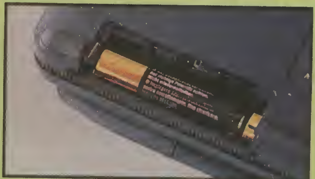
SPREADSHEET

For real calculating power, Portfolio has a Lotus 1-2-3 compatible spreadsheet built-in. It has 127 columns x 225 rows and reads/writes Lotus V1.0 and V2.01 files, so you can transfer data to and from Lotus 1-2-3 on your desktop PC. The Portfolio s 256K ROM includes MS-DOS and PC BIOS compatible systems software.



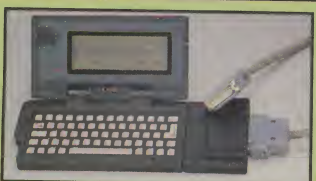
MEMORY CARDS

Portfolio can store and retrieve data and programs from its own RAM, or from small credit card size memory cards, that slot into its built-in card drive. The cards are available in three sizes, 32K, 64K and 128K, so you can carry a library of data in your pocket. The card drive also accepts ROM cards, which can contain commercial or custom software.



POWER SUPPLY

Portfolio is powered by three AA batteries which will run for up to six weeks with normal use, or from the mains using an adaptor. All the peripherals take their power from the Portfolio, so no extra batteries or adaptors are required. A 'battery-low' warning and memory back-up ensure that information is not lost when the batteries are changed.



INTERFACES & PERIPHERALS

Portfolio can communicate with other computers and supports a growing range of peripherals via a built-in 60 pin bus connector. Peripherals available include serial and parallel interfaces and memory expanders (to 640K). You can also add a card drive to your desktop PC, to enable it to read/write to Portfolio's cards.

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Before you decide when to buy your new Atari Portfolio, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your Portfolio, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new Portfolio products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is a new division of Silica Shop, the UK's leading Atari specialists. This new division has been established to provide a service to the more serious home user, as well as to business and education purchasers. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature and begin to experience the "Silica Systems Service".

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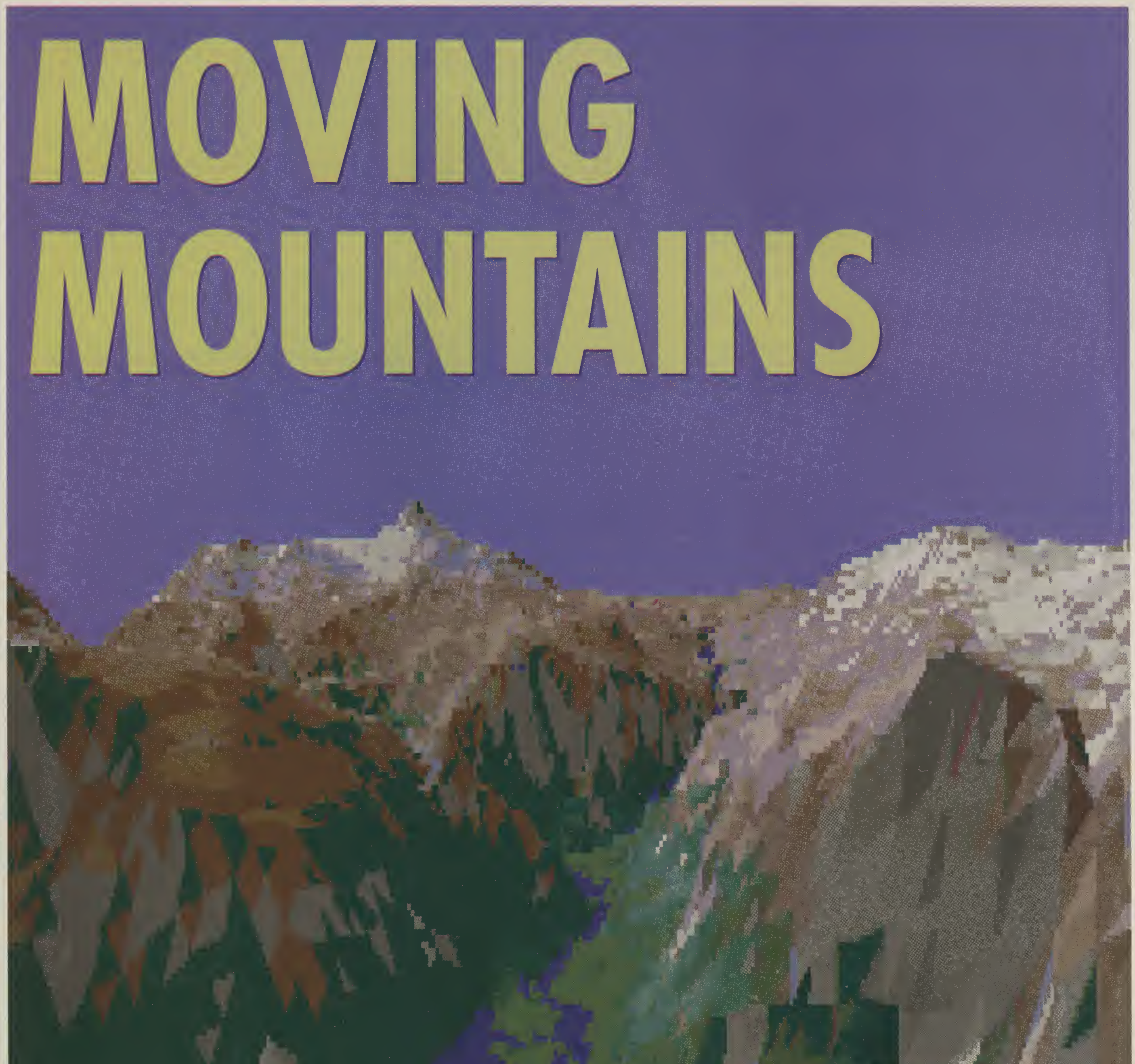
MOVING MOUNTAINS



Who needs to visit the real world when you can use an Amiga to create landscapes and scenes from anywhere in your front room? Maff Evans investigates Vista, which can build pixel mountains from real data...

One of the consequences of the advances in computer graphics is the ability to store and display incredibly realistic pictures easily. Artists can now work with colour in previously undreamed of ways, pictures and animation can be digitised from the real world and now, thanks to a new form of mathematics, lifelike scenes from the real world can be created without any contact with nature at all.

Fractal geometry is one of the most exciting forms of maths this century. The terms 'Mandelbrot set' and 'Julia curve' are worming their way into everyday language. But what relevance does this have to those who are not involved in highbrow mathematics? Well, fractals are basically a new method of working with curves and planes, so by manipulating the numbers to produce a particular fractal set, three-dimensional displays can be created – not only for strange mathematical diagrams, but for scenes from nature; hills, mountains, rivers and lakes.

Virtual Reality Laboratories Inc, creator of the advanced astronomy program *Distant Suns*, has teamed up with Hypercube Engineering to produce *Vista* – a system which allows the user to have such precise control of the elements of fractal curves that any natural landscape can be created – from the majestic mountains of Yosemite Park to the blood-red Olympus Mons on the surface of Mars. The program uses United States Geological Survey (USGS) data to create stunningly realistic images of actual locations, but by generating a random seed number it is possible to create an imaginary landscape which may be even more breathtaking than the real world.

As well as changing the fractal data to produce a basic landscape, it is possible to alter a wide range of settings which will affect the overall appearance of a scene. Mountain ranges can be made more desolate by bringing the snow level down, or in a fit of green fervour you can add forests by altering the tree level.

TEACHING TIME

Remember geography lessons? The endless hours looking at maps to see how rivers and lakes have been formed? Well now this can be done in a much more interesting way thanks to *Vista*. By selecting the River function and clicking on the map display, a river will begin to flow from that location to the next lowest level, and will continue to flow until it reaches the edge of the map. If it reaches a hollow, it will fill it up to form a lake until it can continue flowing. Now all you have to do is render the picture to see exactly how it looks in the real world. A lot more immediate and interesting a method than flat diagrams, I trust you'll agree.

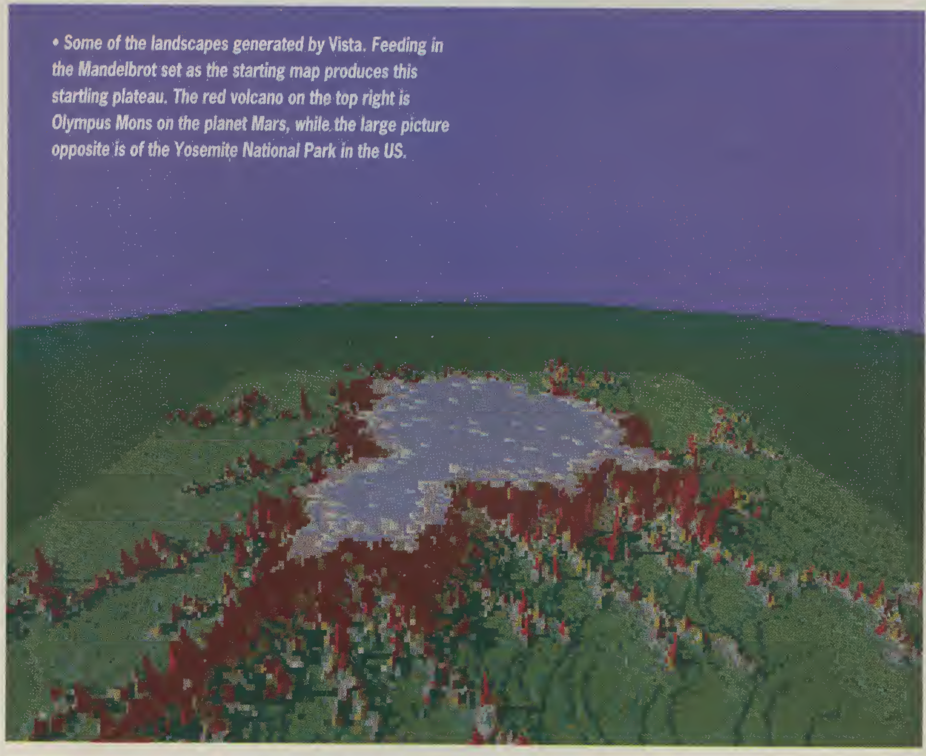
So once you've created your landscape, what then? Well with *Vista,* you can not only look at a scene from a single viewpoint – something which limits many normal scene-generating packages – but from any point and direction you wish. By setting the camera and target locations you can venture down into a valley which will allow you to see areas previously not visible, much like simulating a mountain hike! If this still isn't enough, the camera can be lifted above the ground and banked to give the impression of looking down at the scene from a plane or helicopter. By generating a single scene, shifting the viewpoint around and saving each frame out as an IFF file, it is possible to use them later to create a stunning 3-D flight animation sequence (one created with *Vista* is already available in the public domain). Imagine being able to simulate a frighteningly realistic flight around the mountains of Mars – who needs the Space Shuttle?

WHAT'S IT FOR?

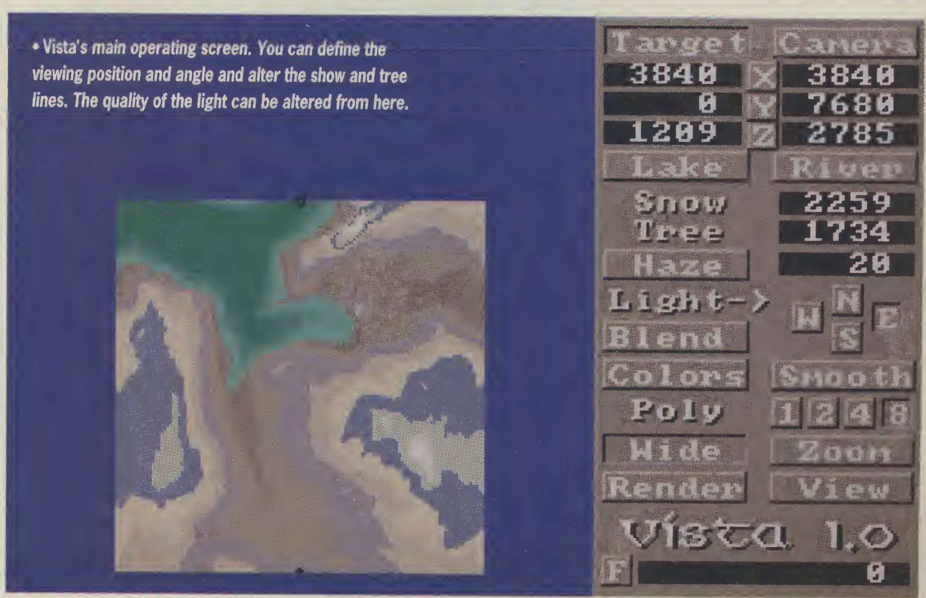
Vista is without doubt a powerful rendering package, but what use can it be? Well as stated earlier, the ability to see an instant three-dimensional representation of a map makes it a perfect tool for educational purposes, but the uses spread far beyond this. Programmers can create lifelike backdrops for games, hikers can look at images to plan their journeys and designers and architects can place computer representations of their buildings within the actual surroundings they will appear in to see how they will actually look.

The power to be able to create imaginary scenes and also to alter the appearance of existing landmarks means that more and more people will find uses for *Vista* in ways people previously would not have dreamed possible with other fractal scenery-generators. The package is way beyond anything else in the field, and gives an intriguing insight into both the worlds of nature and the science of fractal mathematics. ■

Vista costs £59.95 from HB Marketing on 0753 686000. It requires a 1Mb Amiga.



• Some of the landscapes generated by Vista. Feeding in the Mandelbrot set as the starting map produces this startling plateau. The red volcano on the top right is Olympus Mons on the planet Mars, while the large picture opposite is of the Yosemite National Park in the US.



• Vista's main operating screen. You can define the viewing position and angle and alter the show and tree lines. The quality of the light can be altered from here.

Target		Camera
3840	X	3840
0	Y	7680
1209	Z	2785

Snow 2259
Tree 1734
Haze 20
F 0

WIN your own arcade machine

It's really painful having to give things away sometimes, especially when the powers-that-be won't even let me say: "Well dang my poons with a mess of beans, this is a prize and a half!" But here you go, even though I want this prize myself; how would like an arcade machine of your own, with infinite credit, and in your bedroom?

How would you like to play an arcade quality version of *R-Type*? If the answer to all of these questions is "No, not really, thanks anyway for asking" you may as well leave this page now.

If, on the other hand, your answer is "Too right pal!", then read on.

New Computer Express has teamed up with Active Consoles in order to offer a Powercade arcade unit, Philips monitor, and a genuine *R-Type* arcade game to the winner of this week's competition. 50 runners-up will win copies of Virgin's *Edition One*, four game compilation pack. The games included are: *Silkworm*, *Xenon*, *Double Dragon*, and *Gemini WIng*.

The prize, and soon to be prized, Powercade has been sitting in the *Express* office for the last two days with slavering guard dogs, machine gun towers and electric fences keeping the various hacks, hackettes, art people and ad-executives away from it.

The Powercade bodywork was built by a company called Silverline and is actually based on Silverline's Midi machine which has sold 1,000 units in the country alone.

What you actually get is a svelte grey and black case with two built-in joysticks, six buttons; three for each player to go shooting, jumping about, and smart bombing aliens. The front panel of the machine is steel, which means that, even at the height, of a violent mega-frenzied zap attack against small purple creatures coming at you from all angles, you still won't be able to wrench the joysticks from the Powercade.

The game you get is in printed circuit board (PCB) form, and is the highly-rated *R-Type*. Replete with three-way parallax, hardware sprites, hardware scrolling and a neat little tune, it should keep even the most hard bitten of games fans happy for months. Once bored with the board you simply contact Active Consoles on 081-752 0260 and buy yourself another game. It even has a rental scheme in the pipeline whereby you can hire a PCB for £20-£25 a month.

The company has also decided to throw in a Philips SCART monitor so that you can appreciate the full, adrenal vigour of the game.

If, by some freak of chance you don't win the game, there's no need to feel hard done by; you could win the *Edition One* games compilation from Virgin Games. *Silkworm* alone would take a hell of a lot of beating. So, combined with three other excellent games: *Xenon*, the space aged laser 'em up, *Gemini Wing*, defeat those beasties? I for one doubt most people could, and *Double Dragon*, chop-sockey with a vengeance, make Jackie Chan look like Jackie Collins if your reflexes are good.

There you go then. It's all down to you and all you have to do is answer five simple questions. I know they must be simple because I knew the answers, at least I think I do. Of course you also have to buy this issue of *Express* and send in the coupon below. This week we haven't bothered with a hidden camera on the competition page to spot people who don't buy the magazine but still have the unmitigated gall to enter the competition. Nope, this week, hidden in *Shopping Express*, there's an invisible midget-helicopter armed with guided missiles able to frazzle a six foot four, 14-stone man at a distance of half a mile. So if you don't purchase the issue of *Express* you are reading at the moment, don't say we didn't warn you.

And here are the questions:

1) What was the nickname of the yellow Pacman?
A) Nigel Lawson
B) Old Jaundice Face
C) Clyde

2) What name would you NOT find on a *Space Invaders* high-score table?
A) AAA
B) NIP
C) Algernon Montmorency-Digby-Smalls

3) What would you have been driving if you were playing *Battlezone*?
A) A horse
B) A tank
C) A small green salad with gherkins

4) Which company did the coin-op conversion of *R-Type*?
A) Activision
B) ICI
C) The Company of Wolves

5) What was the name of the game based on a large gorilla?
A) *King Kong*
B) *Donkey Kong*
C) *Bedtime for Bonzo*

Simply write the correct letters in the spaces provided on the coupon below and send it, on the back of an envelope or preferably a really exotic postcard, to: Powercade Comp, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW. Entries to arrive no later than Monday 17, that's September, and that's 1990. The first card out of the publisher's grease stained fez wins the prize. Job done, end of chat. ■

PLUS

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Answers: 1) .... 2) .... 3) .... 4) .... 5)......................

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